AGRICULTURAL DEVELOPMENT IN THE EASTERN CARIBBEAN: A SURVEY

Prepared by an AID Survey Team Visiting Antigua, Barbados, Dominica, Grenada, Montserrat, St. Kitts-Nevis-(Anguilla), St. Lucia, and St. Vincent, October 16-November 23, 1977

Team Members

Donald R. Fiester, Regional Rural Development Officer, USAID/ROCAP (Guatemala), Team Leader
William Baucom, Agricultural Economist, International Development Staff, USDA
Alphonse Chable, Consultant in Agricultural Information Systems
Clarence Zuvekas, Jr., Consulting Economist, International Development Staff, USDA

PREFACE: PURPOSE OF THE MISSION

The central purpose of the Agricultural Survey was to gain a better understanding of the status and potential of the agricultural sector in each country in the Eastern Caribbean region through on-site consultation with key Government officials. In this context, the Team sought to:

1. Identify the problems and priority needs of the agricultural sector in each country as determined by local officials

2. Evaluate the adequacy of both local and external resources for meeting agricultural sector needs in each country

3. Evaluate current USAID assistance strategy vis-a-vis the agricultural needs of each country and the activities of other development assistance institutions

4. Determine the need and requirements for agricultural sector assessments and/or studies necessary to identify specific projects appropriate for AID assistance in the region

The 4 members of the Survey Team visited the region from October 16 to November 23, 1977. We met with a broad range of public officials including Ministers, Chief Agricultural Officers, and staff members of institutions concerned with research, extension, credit, marketing, land titling, and fisheries. The Team also visited small and medium-sized farms and talked to farmers and hucksters (intermediaries). Our recommendations were put in final form in Washington, D.C. from January 30 to February 10, 1978.

We wish to express our appreciation to the Governments in the Eastern Caribbean for the excellent cooperation and personal courtesies extended

to us, and for the frankness which characterized our discussions. To the extent that we were able to gain insights into national and regional agricultural problems during our all-too-brief visit, Government officials in these countries deserve much of the credit.

Donald R. Fiester, Team Leader
William Baucom
Alphonse Chable
Clarence Zuvekas, Jr.

Washington, D.C.
February 10, 1978

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GLOSSARY

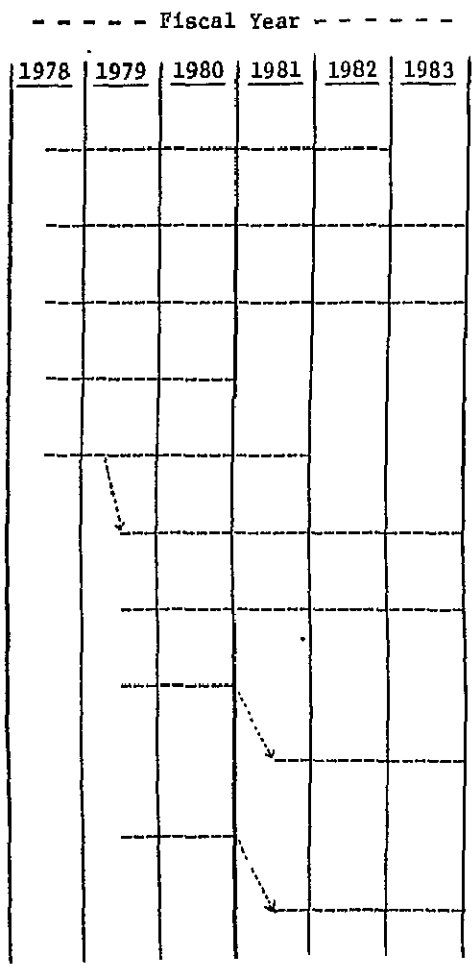
ABDB	Antigua and Barbuda Development Bank
ACB	Agricultural Credit Bank (Barbados)
ACB-SV	Agricultural and Co-operative Bank of St. Vincent
AIB	Agricultural and Industrial Bank (St. Lucia)
AID	Agency for International Development (U.S.)
AID Bank	Agricultural and Industrial Development Bank (Dominica)
APC	Agricultural Production Credit (CDB/AID program)
BDB	Barbados Development Bank
BDD	British Development Division in the Caribbean
BMC	Barbados Marketing Corporation
CARDI	Caribbean Agricultural Research and Development Institute
CARICOM	Caribbean Common Market
CATIE	Centro Agronómico Tropical de Investigaciones y Enseñanza
CDB	Caribbean Development Bank
CFC	Caribbean Food Corporation
CIAT	Centro International de Agricultura Tropical
CIDA	Canadian International Development Agency
CIMMYT	Centro Internacional para el Mejoramiento del Maiz y del Trigo
CIP	Centro Internacional de la Papa
CMC	Central Marketing Corporation (Antigua; St. Kitts)
DAMB	Dominica Agricultural Marketing Board
DFC	Development Finance Corporation
DFMC	Development Finance and Marketing Corporation (Montserrat)
ECCA	East Caribbean Currency Authority
ECIAF	Eastern Caribbean Institute of Agriculture and Forestry
ECLA	Economic Commission for Latin America
FAO	Food and Agriculture Organization of the United Nations
FIC	Farm Improvement Credit (CDB/AID program)
FIO	Farm Improvement Officer (CDB/AID program)
GAIDC	Grenada Agricultural and Industrial Development Corporation
GDP	Gross Domestic Product
GHA	Grenada Housing Authority
GMB	Grenada Marketing Board
GNP	Gross National Product
JSA	Jamaica School of Agriculture
LDC	Less Developed Country
LMA	Land Management Authority (Dominica)
NACO	National Agricultural Corporation (St. Kitts)
NCDB	National Commercial and Development Bank (Dominica)
OAS	Organization of American States
PCV	Peace Corps Volunteer
SIAB	Sugar Industry Agricultural Bank (Barbados)
SLMB	St. Lucia Marketing Board

SNAP	St. Vincent National Agricultural Program
SVMB	St. Vincent Marketing Board
UWI	University of the West Indies
WINBAN	Windward Islands Banana Association

PROPOSED EASTERN CARIBBEAN REGIONAL DEVELOPMENT STRATEGY

TIME-PHASED PROJECT RECOMMENDATIONS

Project	Type of Funding	Primary Action	Counter-Part Agency	Est. U.S. Cost (millions)
A. National Credit Agency Development	Grant	Tech. Assist.	CDB	$ 1.3
B. Regional Cropping Systems Research	Grant	Tech. Assist.	CARDI	1.7
C. Caribbean Food Corporation	Loan/ Grant	Capital & T.A.	CDB	10.0 0.6
D. Coordinated Sector Assessments	Grant	Tech. Assist.	CARDI/ UWI	0.4
E. Regional Marketing Board Development	Grant	Tech. Assist.	CFC/ CDB	1.5
F. Small Farmer Commodity System	Loan/ Grant	Capital &.T.A.	CFC/ CDB	10.0 0.6
G. Agricultural Production Assistance Program	Grant	Tech. Assist.	UWI	1.3
H. Regional Water Management Analysis	Grant	Tech. Assist.	CDB	0.2
I. Regional Water Use Improvement	Loan/ Grant	Capital & T.A.	CDB	10.0 1.0
J. Fisheries Development	Grant	Tech. Study	CFC	0.2
K. Small Operator Fishing	Loan/ Grant	Capital & T.A.	CDB	10.0 1.0



PROPOSED EASTERN CARIBBEAN REGIONAL DEVELOPMENT STRATEGY

TIME-PHASED PROJECT RECOMMENDATIONS

Project	Type of Funding	Primary Action	Counter-Part Agency	Est. U.S. Cost (millions)	Fiscal Year 1978	1979	1980	1981	1982	1983
L. Agricultural Planning/Project Development	Grant	Tech. Assist.	CDB	$ 2.8						
M. Integrated Rural Development	Loan/ Grant	Capital & T.A.	CDB/ CARDI	15.0 1.0						
N. Regional Small Animal Systems	Grant	Tech. Assist.	CARDI	0.3						
O. Agricultural Production Credit II	Loan	Capital & T.A.	CDB	5.0						
P. Regional Horticultural Research	Grant	Tech. Assist.	CARDI	1.0						
Q. Land Settlement Program	Loan	Credit & Land Sale Insurance	CDB	2.5						

SUMMARY AND CONCLUSIONS

Macroeconomic Overview (Chapter I)

The independent countries of Barbados and Grenada, the five Associated States of Antigua, Dominica, St. Kitts-Nevis-(Anguilla), St. Lucia, and St. Vincent, and the Crown Colony of Montserrat had a combined population in 1976 of just under 800,000. The population growth rate accelerated from 0.6 percent annually during 1960-70 to an estimated 1.5 percent during 1970-76. The higher growth rate is attributed largely to reduced opportunities for external migration.

Gross Domestic Product (GDP) in the 8 countries averaged US$730 at factor cost in 1976. The range was from US$270 in St. Vincent to US$1,350 in Barbados. GDP at market prices was approximately 10-15 percent higher. Health, education, and housing indicators suggest that levels of living are higher than the income figures suggest. Economic growth in the last decade, however, has been rapid only in Barbados; elsewhere, growth rates range from mediocre to negative.

No reliable data seem to be available on income distribution, but our impression is that incomes are more equally distributed than in Central and South America. This reflects both the decline of private plantation agriculture and conscious government policies to redistribute income. The "basic needs" approach to measuring well-being would also indicate a relatively high degree of equality.

Unemployment rates in 1970 ranged from 5 to 11 percent, lower than the average (13 percent) for the larger Caribbean region which includes Belize, Guyana, Jamaica, and Trinidad-Tobago. However, underemployment rates have probably increased since 1970.

Consumer prices increased at annual rates of 10-20 percent between 1970 and 1975. In 1976, however, inflationary pressures moderated, with consumer prices rising by 5-13 percent.

All countries in the region are heavily dependent on foreign trade. Imports of goods and services accounted for 60-80 percent of the GDP in 1971, while exports accounted for only 19-57 percent. Since then, rising import prices and sluggish export performance have increased the trade gap in some countries.

During the early 1970s, current budgets usually showed modest deficits or small surpluses. In the last few years, however, several countries have experienced current deficits exceeding 20 percent of expenditures. In most countries, virtually all capital budget revenues are supplied by foreign assistance agencies.

Major Problems of Agricultural Development in the Eastern Caribbean (Chapter II)

At the regional level, major constraints to agricultural development may be grouped under eight headings. These are as follows (not necessarily in order of priority):

1. Technology and Knowledge

    a. Poor use of available technology
    b. Deficient research programs
    c. Inefficient information transfer systems

2. Attitudes toward Agriculture
   a. Perceived low profitability of farming
   b. Perceived low social status of agricultural work
   c. Apparent low priority assigned to agriculture by public officials

3. Natural Resource Endowments
   a. Thin soils
   b. Rainfall patterns
   c. Salinity problems related to underground water supply
   d. Wind

4. Natural Resource Utilization
   a. Underexploitation of forest resources, multiple cropping opportunities, and forage resources
   b. Poor use of water resources
   c. Lack of erosion control
   d. Deficient land use planning

5. Public Policy
   a. Low priority of agriculture
   b. Deficient planning/programming capabilities
   c. Inconsistent policies
   d. Wasteful subsidy policies
   e. Deficient land use and land tenure policies

6. Institutional Services
   a. Poor management
   b. Limited training of technical staffs
   c. Lack of inter-institutional coordination

7. Infrastructure
   a. Lack of good rural access roads
   b. Lack of inter-island transport
   c. Deficiencies in communications

8. Production and Distribution Costs
   a. Low yields
   b. High cost of farm labor
   c. High cost of imported inputs
   d. Fascination with advanced technology
   e. High marketing margins

An Approach to Rural Development in the Eastern Caribbean (Chapter III)

The Survey Team believes that the scope for bilateral programs or projects is restricted by the small size of the countries, their limited short-run absorptive capacity, the technical and managerial capacity of public institutions, and the present nature of small-farm agriculture. Many basic problems and technical assistance needs are common to most if not all countries and can be resolved more efficiently through regional projects than through bilateral projects having limited benefits to any one country. Significantly increased food production also requires a regional approach. Thus our proposed strategy emphasizes the strengthening of existing regional institutions, in collaboration with national counterpart agencies, to meet the needs of AID's target group.

In the short run, we recommend that emphasis be placed on strengthening national and regional institutions through grant-funded technical assistance programs in research, extension, credit, marketing, and planning and project development capabilities. We also recommended coordinated agricultural sector assessments for the various countries, with attention given to primary data collection in the areas of production costs, rural incomes, and farmer attitudes. A loan to the Caribbean Food Corporation is recommended in FY 1978, but other loan projects, we believe, should await the institutional strengthening which the grant-funded projects seek to promote.

A time-phased summary of the Survey Team's recommendations is presented in the chart on pages

Country Summaries and Requests for A.I.D. Assistance (Chapters IV-XI)

A summary of agricultural conditions and constraints to agricultural development is provided for each country in the region. Also included is a list of formal and informal requests for A.I.D. assistance.

PART ONE
REGIONAL OVERVIEW

CHAPTER I
MACROECONOMIC OVERVIEW

A. POPULATION

Between the census years 1960 and 1970, population in the Eastern Caribbean grew quite slowly. In the eight countries covered in this report, the number of inhabitants increased from 675,900 to 713,700. The annual rate of growth was 0.6 percent. Data for the individual countries are shown in Table 1.

As these data indicate, the population growth rate was held down by a high rate of external migration, particularly to Canada, the U.S., and the U.K. However, tighter immigration regulations in these countries have reduced (legal) migration in the 1970s, and this may be a factor in the higher population growth rates reported in this decade (1.5 percent for the eight countries as a group). On the other hand, these higher reported rates seem in at least some countries to be attributable to data problems. Using Government statistics, and other available information for Grenada and St. Vincent, population in mid-1976 was estimated to be 781,500.1/

1/ Population estimates made by various national and international agencies differ for all countries, but especially for Grenada and St. Vincent.

TABLE 1

REGIONAL POPULATION, 1960, 1970, AND 1976

	Population (thousands)			Absolute Change, 1960-70 ('000s)[d]			Population Growth Rate	
	1960 (Census)	1970 (Census)	Mid-1976 (Estimate)	Total	Natural Increase	Net Migration	1960-70	1970-76[e]
Antigua	54.1	64.8	71.4[b]	10.7	13.2	- 2.5	1.9	1.6
Barbados	232.3	236.9	247.3[b]	4.6	41.6	-37.0	0.2	0.7
Dominica	59.9	69.5	78.9[b]	10.1	20.2	-10.1	1.5	2.1
Grenada	88.7	92.8	102.5[c]	4.7	23.4	-18.7	0.4	1.7
Montserrat	12.2	11.5	12.2[b]	-0.6	1.8	- 2.4	-0.6	1.0
St. Kitts[a]	56.7	52.1	54.0[b]	-3.9	10.7	-14.6	-0.8	0.6
St. Lucia	86.1	99.8	113.5[b]	14.1	31.3	-17.2	1.5	2.1
St. Vincent	79.9	86.3	101.7[c]	7.0	27.1	-20.1	0.8	2.7
Total	675.9	713.7	781.5	46.7	169.3	-122.6	0.6	1.5

Source: 1960 and 1970 censuses; country and other estimates for 1976.

[a] The 1960 data are for St. Kitts-Nevis-Anguilla. Anguilla was not covered in the 1970 census, but for purposes of comparability we are estimating its population in 1970 and 1976 to have been 6,000 (compared with about 7,000 in 1960), and including it in the total population figure for 1970. Most of the data in this report, however, refer only to St. Kitts and Nevis, and for convenience the State's name will sometimes be referred to only as St. Kitts.

[b] Government figures (unofficial in the case of St. Kitts-Nevis and based on an extrapolation of 1970-75 data for St. Lucia).

[c] Other estimate.

[d] There are some small discrepancies between these data and the changes indicated in the first two columns.

[e] The 1970 census figures (April 7, 1970) were increased at the 1960-70 growth rate to obtain mid-1970 population estimates.

B. GDP LEVELS AND TRENDS

The regional GDP in 1976 was estimated by ECLA to be approximately US$571.5 million at current factor cost. Barbados accounted for considerably more than the other seven islands combined. Per capita GDP averaged US$730 at factor cost, and approximately 10-15 percent more in market prices; but there was considerable variation around the regional mean. Specific country data are presented in Table 2.

GNP/GDP figures, of course, can be very misleading indicators of development. Health and education data, however, also suggest that the countries in the region have made some development gains over the years. In addition, the Survey Team found the quality of rural housing to be better than what one usually sees in the low-to-medium income developing countries of Central and South America. On the other hand, food prices in the region are very high, and the purchasing power of a dollar and dietary patterns are affected accordingly. The poor growth record of most of the countries in the region is also cause for concern.

The absence of national accounts data in some countries, and their availability for only a few years in most of the others, make it difficult to determine long-term trends in per capita output. Estimates for 1965-74, however, are available from the World Bank Atlas and are reproduced in Table 3. These data show that only Barbados had a rapidly growing economy during this period. Moderate-to-mediocre growth rates occurred in Grenada, St. Lucia, and St. Vincent. Per capita GNP declined in Antigua, Dominica, and St. Kitts, while the situation in Montserrat is unclear, Gross agricultural product in most countries either has been stagnant or has declined during the 1970s.

TABLE 2

GROSS DOMESTIC PRODUCT AT FACTOR COST, 1976

	GDP at Factor Cost (US$Milion)		Agriculture's Share of the GDP (percent)
	Total	Per Capita	
Antigua	48.9	680	8
Barbados	334.4	1,350	13
Dominica	28.1	360	37
Grenada	40.0 [a]	390	22
Montserrat	10.0	820	n.a.
St. Kitts-Nevis-(Anguilla)	33.6	620	28
St. Lucia	48.7	430	21
St. Vincent	27.8	270	21
Total	571.5	730	-

Sources: ECLA; population estimates in Table 1.

[a] New estimates obtained in Grenada.

Table 3 shows that the region as a whole experienced an especially difficult year in 1975. Dominica and Barbados had good recoveries in 1976, but per capita output continued to fall in Antigua and St. Kitts and increased slowly in the other countries. Reasons for poor-to-mediocre growth rates since 1965 vary among the countries in the region, but among the more important factors have been increasingly uncompetitive sugar production, adverse price trends for other export crops, drought, stagnation or decline in tourist arrivals, and sharply rising fuel prices.

Agriculture's share of the GDP varies widely, from 37 percent in Dominica to only 8 percent in Antigua (see Table 2). Gross agricultural product in most countries either has been stagnant or has declined during the 1970s.

C. INCOME DISTRIBUTION

No solid information was obtained on income distribution in the Eastern Caribbean. The 1970 census data for Barbados are considered too unreliable to be useful. Income data have been collected in one or two other countries but have not yet been tabulated. Our comments, then, must be based on indirect evidence.

Our impression is that incomes in the Eastern Caribbean are more equally distributed than in most Central and South American countries. The decline (and in some cases disappearance) of plantation agriculture has tended to reduce the size and incomes of the more affluent rural groups, and government policies have consciously sought to provide a more equal distribution of income (or consumption of basic goods and services). Sugarcane workers in several countries have a guaranteed minimum annual income. The degree of inequality in the distribution of land varies, but

TABLE 3

RATES OF GROWTH OF REAL PER CAPITA GNP OR GDP, 1965-74, 1975, and 1976

	Annual Rate of Growth of Real Per Capita GNP[a] or GDP[b]		
	1965-74	1975	1976
Antigua	-1.2	-3.8	-6.6
Barbados	5.2	-2.0	3.6
Dominica	-1.2	-8.6	7.6
Grenada	1.6	9.6	1.6
Montserrat	n.a.	n.a.	n.a.
St. Kitts	-0.7	0.9	-0.8
St. Lucia	2.0	-6.2	1.5
St. Vincent	2.4	-9.2	1.0

Sources: World Bank Atlas 1975 (1965-74); preliminary GNP estimates for 1975-76; population data from Table 1.

[a] 1965-74.

[b] 1975 and 1976. The figures for Barbados are at factor cost; for other countries they are based on GDP at market prices.

especially if government-owned lands are excluded from the data Gini coefficients tend to be lower than one usually finds in Central and South America. Health and education indicators suggest widespread consumption of these basic services, and our field observations suggest that a high percentage of the population in both urban and rural areas has fairly good housing.

D. EMPLOYMENT

Between 1960 and 1970 total employment declined in six of the eight Eastern Caribbean countries covered in this report, even though the working-age population increased in all but two countries. There was a decline in the "work rate," the ratio of total employment to the total population 14 years of age and over. For the larger Caribbean region (including Belize, Guyana, Jamaica, and Trinidad-Tobago), the unemployment rate rose from 4 percent in 1960 to 13 percent in 1970 (or an estimated 17 percent if account is taken of the "discouraged workers" who withdrew from the labor force). In the eight countries surveyed here, however, unemployment rates were below the regional average, ranging from 5 to 11 percent (see Table 4).

Employment data are very sketchy for the years since 1970, but there is reason to believe that unemployment rates have continued to rise, as rural underemployment has been converted to open unemployment in urban centers. Most observers believe that rural-urban migration has been caused to a large extent by a growing gap between rural wages and urban wages, the latter having been pushed up by strong trade unions, public-sector wage policies, and the creation of skilled white- and blue-collar jobs in industry and tourism. Many persons--especially those in the 14-24

TABLE 4

EMPLOYMENT AND UNEMPLOYMENT DATA, 1960 AND 1970

	Population, 14+ (P): Percentage Change, 1960-70	Employment (E): Percentage Change, 1960-70	Work Rate 1960	(E/P) 1970	Full-Time Workers as a Percent of Total Employment, 1970	Unemployment Rate 1970
Antigua	21.7	17.1	49.1	47.2	66	10.0
Barbados	4.0	-1.4	57.4	54.5	75	7.7
Dominica	8.4	-12.1	64.9	52.7	70	7.0
Grenada	7.2	2.8	51.8	49.7	65	9.3
Montserrat	-5.3	-9.8	53.9	51.4	65	4.7
St. Kitts	-23.4	-12.7	44.4	50.6	62	5.1
St. Lucia	5.8	-7.3	57.1	50.0	72	9.1
St. Vincent	4.9	-10.3	54.8	46.9	58	10.7

Source: 1960 and 1970 censuses.

age groups, who constitute the majority of the unemployed--evidently prefer open unemployment to low productivity work in rural areas. While seeking an attractive urban job, younger workers often live at home or with relatives, and in these cases their economic situation usually is not desperate.

E. PRICE TRENDS

Given the heavy dependence of the Eastern Caribbean on imports, the region was bound to be very much affected by the acceleration of worldwide inflation in the 1970s. In all eight countries, consumer prices increased at compound annual rates of 10-20 percent between 1970 and 1975, and food prices rose even faster. The most severe inflationary pressures occurred in 1974 when prices rose by 35-40 percent in some countries. By 1976, however, inflationary pressures had moderated considerably, with consumer prices rising by 5-13 percent. Data for the individual countries are presented in Table 5.

In some countries, wage increases lagged well behind the rise in consumer prices, both for workers in the private sector and for civil servants. Insufficient information was available to determine real wage trends during the 1970s, but there is little doubt that real wages for sizable numbers of workers are lower now than in 1970.

F. FOREIGN TRADE AND THE BALANCE OF PAYMENTS

All of the eight countries covered in this report are heavily dependent on imports. Comparative data for 1971 show that imports of goods and services accounted for 60-80 percent of the GDP (see Table 6). Exports, however, were much lower, their share of the GDP ranging from 19

TABLE 5

ANNUAL RATES OF INCREASE OF CONSUMER PRICES,
1970-75 AND 1976

	Compound Annual Inflation Rate, 1970-75	Inflation Rate, 1976
Antigua	13.4[a]	9.2[a]
Barbados	18.5	5.0
Dominica	14.2	10.9
Grenada	21.2[b]	12.9[b]
Montserrat	14.6[c]	9.0[c]
St. Kitts	10.4	9.1[d]
St. Lucia	16.2	6.9[c]
St. Vincent	14.2[e]	12.2[e]

Sources: Country retail price indices.

[a] July-July.
[b] GDP deflator. The figure in the first column refers to the period 1973-75. For the full period 1970-75, the rate of increase would have been lower.
[c] June-June.
[d] January-January.
[e] December-December.

TABLE 6

FOREIGN TRADE AS A PERCENTAGE OF THE GDP,
1971 AND 1975

	1971 (Goods and Services)		1975 (Commodity Trade Only)	
	Exports/GDP	Imports/GDP	Exports/GDP	Imports/GDP[a]
Antigua	42.6	76.8	53.9[b]	85.7[b]
Barbados	57.0	79.7	33.1	66.7
Dominica	34.0	69.9	36.4	67.1
Grenada	29.5	59.7	29.5	58.0
Montserrat	19.3	60.2	n.a.	n.a.
St. Kitts	32.4	80.3	64.4	69.8
St. Lucia	27.4	75.8	25.1	70.8
St. Vincent	23.6	80.2	18.7[c]	67.7[c]

Sources: Country foreign trade annuals and unpublished data.

[a] Import data are on a CIF basis.
[b] 1973; import data for 1974 and 1975 are seriously distorted.
[c] 1974.

to 57 percent. The trade gap was substantial in all cases, ranging from 23 to 57 percent of the GDP. Data for 1975, which refer to commodity trade only, show that the trade gap was still wide in all countries except St. Kitts, where high sugar prices temporarily kept the trade deficit small.

The principal commodity exports in the region are all agricultural. Sugar accounts for about half of Barbados' export earnings, and in St. Kitts the figure is about 60 percent. Dominica, St. Lucia, and St. Vincent rely on bananas for 50-60 percent of their foreign exchange earnings from exports. In Grenada, bananas, cocoa, nutmeg (and its by-product, mace) together account for 95 percent of export earnings. Only in Antigua and Montserrat are agricultural exports--and also nonagricultural exports--of minor importance.2/

All eight countries rely heavily on imports to satisfy domestic demand for food and other agricultural products. Food imports account for 20-40 percent of total commodity imports. In Barbados, annual food imports during 1974-76 averaged US$47 million (nearly US$200 per capita), only a small share of which can be attributed to the tourist industry.

Complete balance-of-payments data are available only for Barbados, which alone among the Eastern Caribbean countries has a Central Bank. The basic balance has been consistently negative, averaging B$57.8 million during the period 1970-76. That portion of the basic balance requiring official financing, however, averaged only B$0.6 million. Still, reserve changes can be considerable from year to year, largely because of changes

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2/ Antigua formerly exported refined petroleum, but the refinery there has been closed for several years.

in world sugar prices: a net reserve gain of B$37.2 million in 1975, for example, was followed by a net loss of $38.6 million in 1976.

Indicative balance of payments estimates have been prepared for Dominica, but only for a few scattered years. Thus it is not possible to determine trends. The remaining islands generally have data only on the balance of visible commodity trade (exports FOB and imports CIF), though a few also make annual estimates of foreign exchange receipts from tourism.

The seven less developed countries (LDCs) in the region share a common currency, issued by the East Caribbean Currency Authority. The nature of the currency arrangements is such that the LDCs do not experience balance-of-payments difficulties in the sense of having foreign exchange shortages. If an LDC's current account deficit is not fully covered by capital inflows, economic activity and government revenues simply contract.

Tourism is a major source of foreign exchange earnings in the region, particularly in Barbados. However, tourist arrivals declined between 1973 and 1975, and even after some recovery in 1976 they were still lower than in 1973 (see Table 7). Estimated earnings from tourism are shown in Table 7. If converted to constant prices, they would show a substantial decline between 1973 and 1976.

Another important item in the balance of payments of the LDCs is emigrants' remittances. Partial data for St. Kitts and Nevis indicate that these inflows account for at least 16 percent of their GDP. In Anguilla, it is believed that remittances account for a third of the GDP. The figure is probably high also in Montserrat, and it may well be more than 10 percent in some of the other LDCs. Estimates for Dominica, however, suggest

TABLE 7

TOURISM AND TOURISM EARNINGS, 1973-1976

A. Thousands of Tourists[a]

	1973	1974	1975	1976
Barbados	222	231	222	224
Grenada	33	15	21	25
West Indies Associated States and Montserrat	176	180	168	177[b]
Total	431	426	411	426

B. Millions of U.S. Dollars

	1973	1974	1975	1976
Barbados	69.6	76.3	77.3	82.5
Grenada	11.9	6.1	7.2	6.3
West Indies Associated States and Montserrat	17.3	16.3	n.a.	n.a.
Total	98.8	98.7	n.a.	n.a.

Source: Country tourist board data.

[a] Excludes cruise ship passengers.
[b] Of this amount, Antigua accounted for 57,000 and St. Lucia for 56,000.

that the figure there is only about 3 percent. In Barbados, private transfer payments amounted to only 2 percent of the GDP in 1976.

G. PUBLIC FINANCE

The government sector constitutes a major share of the GDP throughout the region. Complete data are not readily available, since some public expenditures are not channeled through the budget, but it appears that government spending accounts for at least a quarter of the GDP in all countries and reaches perhaps 35-40 percent in some.

In the early 1970s current account budget deficits were generally modest, or small surpluses were realized. In the last few years, however, deficits amounting to more than 20 percent of expenditures have been experienced in some countries: Grenada in 1975, Antigua, Dominica, and St. Kitts in 1976, Montserrat in both 1975 and 1976, and St. Vincent in 1975/76. Barbados moved from a strong current surplus in 1975 to a modest current deficit and a large over budget deficit in 1976. More detailed information is provided in the individual country chapters.

CHAPTER II

MAJOR PROBLEMS OF AGRICULTURAL DEVELOPMENT IN THE EASTERN CARIBBEAN

The Survey Team had only 2 to 4 days in each island to identify the major constraints to agricultural development. Even more difficult was the task of making regional generalizations, since each island has a unique set of economic, social, and institutional constraints. This will be apparent in the chapters in Part Two on the individual islands. In the present chapter, however, the focus is on the region, and readers should bear in mind the limitations of the generalizations made herein.

At the regional level, it appears to us that the major constraints can be grouped under eight headings. These are not necessarily listed in order of priority, since it would be presumptuous for us to claim such definitive knowledge, and since the various constraints are interrelated. Indeed, a collective approach to these constraints is likely to be more productive than attacking each one in isolation.

A. TECHNOLOGY AND KNOWLEDGE

1. Poor Use of Available Technology

Present low levels of production per acre--whether of food crops, fruit, spices, or livestock--are a reflection of the poor use of available technology. Varieties grown too frequently are not appropriate for local soil and climatic conditions; fertilizers are seldom used (except

for bananas), and when applied do not reflect well-established correlations between laboratory analysis and field response; plant populations are usually low; weed competition is excessive; the use of irrigation is minisicule; and pests causing serious economic damage are either uncontrolled or, in some cases, controlled by excessively dangerous chemicals applied by unskilled operators. These factors seriously limit yields and result in high per-unit produce values.

2. Deficient Research Programs

Considerable agronomic research has been carried out by the UWI in Barbados and in the other islands. There have been few attempts, however, to (1) bring together the existing "state of the art" for each commodity, (2) test recommended practices under controlled field conditions on each island, and (3) make the resulting conclusions available to extension, credit, and marketing institutions for transmission to farmers.

Most small farms seen during our trip were using some type of multiple cropping system involving either simultaneous cultivation of 2 or more crops or sequential cultivation of different crops. However, no research was reported to be underway on how to improve present multiple cropping systems in order to increase the net income of small farmers.

Linkages are poor (1) between research and extension nationally, (2) among researchers within the region, and (3) with international research centers. Most national researchers depend on UWI and CARDI to serve as their links with extraregional centers. If these links exist, the benefits are not apparent at the national level.

None of the research programs reviewed was carefully planned to concentrate on the areas having the greatest potential for increasing producer

profits. Most of the trials, which usually were not statistically replicated, were designed on the basis of technicians' intuitive perceptions or on problems based upon their particular areas of expertise.

Economic analysis of alternative production options, as well as farm management analysis, appear to be almost nonexistent. Given the high cost of pest control chemicals, fertilizers, seed breeding stock, etc., such studies are essential for securing the most profit from the limited capital investments that most small farmers are able to nake.

The technical training of most researchers below the level of Chief Agricultural Officer (CAO), except in Barbados, is at best equivalent to the B.Sc. level. Many researchers have only a 2-year diploma from the Jamaica School of Agriculture. Modern research requires more advanced training, as well as the integration of many disciplines, for relevant problem solving. CARDI and the UWI are the logical institutions to provide these essential specialized services to backstop national programs, but they do not appear to be fulfilling this need; nor are their research results applicable to the varied ecology and small-farm needs of the region. In part, the problem seems to lie with the national research agencies, which appear seldom to call on these services and to specify exactly what is needed to achieve national development objectives. It may also be argued, however, that CARDI and the UWI should assume more aggressive roles in designing relevant research and teaching national counterparts how it may be carried out in a systematic fashion.

3. Inefficient Information Transfer Systems

Sound technical information, based on locally tested results, is essential for productive, modern agriculture. To be effective, research

results must be presented to the national information transfer system in forms that can be easily understood and applied to farm operations. Much information is available in the Caribbean but is not so packaged and tested as to give farmers the confidence required to invest or to assume debts in order to increase their income and to make the most efficient use of the region's capital, human, and natural resources.

B. ATTITUDES TOWARD AGRICULTURE

1. Perceived Low Profitability of Agriculture

Eastern Caribbean agriculture is widely perceived to be a relatively uprofitable activity. High input costs reportedly are a major reason for this attitude. Upward pressure on wage rates, resulting from the expansion of attractive jobs in industry and tourism, have raised the cost of labor to the point where few farmers are willing to pay the going wage. The energy crunch and worldwide inflation have raised other costs, including those of transport, land preparation, chemical inputs, harvesting, and marketing. Finally, low productivity resulting from improper agronomic practices leaves many farmers with inadequate resources for essential capital investments to improve their operations over time.

2. Perceived Low Social Status of Agricultural Work

Dating historically from the estate system of plantation agriculture, the social image attached to any form of agricultural endeavor is one of monotous drudgery, poor pay, and limited prospects for betterment. St. Lucia's development plan goes so far as to state that a "critical strategic objective" is to "lessen drudgery in agriculture." Young people characteristically move away from the farms, especially if they have advanced to the middle levels of the school system. Those who are well prepared find

attractive jobs in urban areas, but even persons who find no job at all usually prefer to bide their time in the cities rather than return to rural areas and resume agricultural pursuits.

3. Apparent Low Priority Assigned to Agriculture by Public Officials

Agriculture is frequently not perceived by public officials as a vital part of the national economy, even though regional food imports have climbed to more than U.S.$100 million annually. Links between agriculture and tourism are talked about, but little has been done to develop them.

National development policies too often mitigate against the small farmer. In some cases, imported commodities are sold at a higher unit price than the same items (poultry, beef, some vegetables) produced locally.

C. NATURAL RESOURCE ENDOWMENT

1. Thin Soils

Natural resources, other than those attractive for tourism, are limited. All of the islands, except Anguilla and to a lesser extent Antigua and Barbados which are coraline, have volcanic soils suitable for a number of crops. However, water problems in the Leewards and topography in the Windwards limit extensive agricultural production and restrict the areas of usable land. The thinner soils of the Leewards, coupled with low rainfall, have practically selected out most enterprises, leaving cotton, sugarcane, and extensive grass land management as the principal traditional land-use options. The lusher Windward islands, with higher rainfall, have developed stable tree-crop enterprises, often on rugged topography. Any promotion of row crop agriculture must be approached carefully to prevent the evolution of severe soil erosion problems such as those exhibited in the Scotland District of Barbados.

2. Rainfall Patterns

Rainfall is unreliable and extremely erratic throughout the Eastern Caribbean. Prolonged droughts, such as the one from 1969 through 1976, have occurred periodically during the islands' history.

3. Salinity Problems Related to Underground Water Supply

Salinity problems have been identified as worthy of study in parts of Montserrat, Antigua, St. Kitts, and Anguilla. The quality of the underground water resources has been the subject of special studies in Anguilla and Barbados. In Barbados, it has been recently determined that fresh water reserves are approximately 5 times the amount originally estimated. Certain parts of the country have been set aside as water protection areas in which rigorous requirements must be met before any agricultural or industrial development project is authorized. In Montserrat, Antigua, and Anguilla, there have been frequent complaints that as the dry season (or drought) progresses and subterranean water supplies are drawn down, the salinity level of this water becomes too high to irrigate some crops. Studies indicate that the stratum of fresh water underlying the islands does constrict during droughts, and mixing with salt water can and does occur. Local experience indicates that when rainfall resumes, surface waters are diluted and underground aquifers are recharged fairly rapidly.

4. Wind

The prevailing northeast trade winds are an annually recurring natural phenomenon in the Eastern Caribbean and are as much a part of the environment as water and sunlight; but a little bit goes a long way. Wind is a harmful influence in that it not only brings about moisture stress in

certain seasons but also causes physical damage to crops. Environmental constraints have influenced Caribbean agriculture to be selective in placing on the windward side of the islands those enterprises which can best tolerate drought and wind stress conditions. Coconut plantings and beef and dairy enterprises are typical operations in these areas. In the more populated areas, sugarcane and arrowroot were observed. In any event, windbreaks are often indispensable adjuncts to crop diversification and may range from natural vegetation to exotic forest trees. In some areas, the windward slopes might better be set aside for waterfall catchment areas and forest management reserves rather than used for intensive crop production under conditions of high economic risks in some years.

D. NATURAL RESOURCE UTILIZATION

Only limited economic use is being made of the area's existing natural resources. These are not abundant, but their further development could significantly increase employment and income, provide construction and fuel, and improve directly or indirectly the quality of life for large numbers of people.

1. Underexploitation of Forest Resources, Multiple Cropping Opportunities and Forage Resources

The tropical climate and high light energy falling daily on each acre of land are not being fully exploited. This energy base can be much more effectively used in forestry to increase the production of timber and of wood or charcoal to replace fossil fuel imports. In crop and livestock activities, better use could be made of sequential cropping, intercropping, and improved forage production to expand food output several times over existing levels and to provide more employment.

2. Poor Use of Water Resources

Despite annual rainfall levels of 30 to 80 inches or more, few water storage facilities have been built, and water for irrigation is reported to be ineffectively applied. Many acres of irrigated crops could be produced, even under the driest conditions, with traditional or innovative techniques for collection, distribution, and irrigation. One acre-foot of rainfall, it may be noted, is equivalent to more than 300,000 gallons of water.

Little information appears available on subsurface water resources, which in some cases can increase land productivity by 100-200 percent and profits by as much as 1,000 percent or more. Caution must be exercised, however, to ensure that the quality of underground water is high and does not affect the productivity of already limited arable soils through salinization.

3. Lack of Erosion Control

Most of the islands have limited areas capable of sustained intensive agricultural production. Erosion, caused by high rainfall, inadequate ground cover, poorly designed water diversion systems, gully control, etc., is constantly eating away at this base. Governments in all the islands visited have recognized the problem and are vocally concerned, but have only small programs to contain a major problem. Technicians often are using standard USDA procedures as they understand them, but few have the formal training required to design sound, cost-effective, area-wide land protection programs also capable of maximizing food production to meet national and regional demand.

4. Deficient Land Use Planning

Land use generally is not based on the detailed analysis and planning necessary for research, extension, credit, marketing, and input supply systems to operate most efficiently.

Effective resource use is closely related to improved utilization of modern technology. Integration of these 2 elements could increase total yields severalfold, reduce per unit costs of production by at least 50 percent, and significantly contribute to lower consumer prices, greater overall employment, and higher producer profits.

E. PUBLIC POLICY

1. Agriculture does not seem to have a particularly high priority in the minds of most key policymakers, who are attracted more to industrial development and tourism. This is sometimes admitted openly, as in Antigua, but even where agriculture nominally has high or highest priority, this usually is not reflected in the distribution of budgetary resources, or in efforts to improve managerial and technical capabilities in the agencies serving the agricultural sector.

2. Planning and programming capabilities are seriously deficient in most of the region, though a promising start has been made in several countries where there is a good technical base on which to build. In some cases the Ministry of Agriculture has no planning/programming unit, a situation which can (and sometimes does) result in an assumption of agricultural planning tasks by the central planning office. Six of the 8 countries have agricultural planning documents, though in a few cases they are in draft form or have not been officially accepted. In only 2 cases do these documents approximate complete plans; most do not clearly identify objectives and

priorities, show how specific programs will address these objectives and priorities, or specify the manpower and financial requirements for each program. In most countries there are few technicians capable of putting together a project paper suitable for consideration by funding agencies.

The persistence of line-item budgeting throughout the region contributes to a lack of focus on programs and program objectives.

3. Agricultural policies are inconsistent in terms of meeting stated objectives. For example, programs to encourage production are sometimes thwarted by ceilings on farm-gate prices or by the inability of marketing boards to fulfill their purchase commitments. Employment creation is widely proclaimed as a major national policy, yet mechanization is encouraged even when it may have no effect on production in comparison with labor-intensive methods.

4. Subsidy policies, while justifiable for meeting social objectives, are often administered in such a way as to result in a very wasteful allocation of resources. The availability of subsidized land clearing and other machinery services artifically stimulates the substitution of capital for labor. Low (and in some cases zero) rent on government-owned land artificially encourages farmers to substitute land (not always of good quality) for labor and other production inputs. In both these cases the result will be higher production costs, which must be absorbed either by the government or by consumers in the form of high product prices. Marketing boards sometimes subsidize the production of certain crops by buying, at a favorable price, all that is produced. This discourages improvements in product quality and thus makes it difficult for production surpluses to be exported. Often the surplus must be destroyed; yet no attempt may be made the following

year to lower prices for surplus commodities and raise them for those which are in shortage locally or for which regional export markets exist. Some of the marketing boards have large operating deficits which must be covered by transfers from general Government revenues. Production credit is subsidized for both large and small farmers. Interest rates on agricultural loans usually range from 5 to 8 percent (sometimes up to 10 percent for large farmers). Since low-interest rate policies are often coupled with a lax policy on delinquent loans, farmers often do not have strong incentives to use resources efficiently. Another problem is that the agricultural credit agencies are dependent on Government contributions to subsidize the low interest rates charged; thus they have little opportunity to develop into financially viable institutions engaging in true development banking.

5. Land use policies often neglect land capability and cost-of-production considerations, and land tenure policies discourage investments. In most of the countries in the region, the Government is a major holder of land, if not the major holder. The use of these lands is occasionally based on a detailed consideration of alternatives (as in St. Kitts, where the recommendation was to continue with sugarcane), but usually this is not the case. Existing information on land capability is neglected, and comparative cost-of-production and profitability studies are rare. Several livestock development projects appear to be extremely costly, and alternative uses of these lands should be considered. Many (but not all) of the Governments in the region express a preference for leasing land to farmers rather than making it available under individual freehold or cooperative ownership arrangements. In some cases the leases are for only 3-5 years, while in others a 20-year renewable lease is granted. Farmers can be evicted, or

their leases not renewed, if they are not working the land to the Government's satisfaction. There are indications that farmers generally do not regard even the long-term leases as providing sufficient security for making long-term investments. Some Governments are willing to consider alternatives to present leasehold arrangements, but others seem fairly committed to this form of tenure.

F. INSTITUTIONAL SERVICES

In general, all the island states of the Eastern Caribbean visited by the Survey Team appeared to have an appropriate range of public institutions, agencies, and statutory boards designed to service the needs of the agricultural sector with respect to research, extension, credit, marketing, etc. However, we believe there are some serious problems associated with the management, technical capacity, and coordination of these service institutions which significantly limit their operational effectiveness.

1. There frequently appears to be an absence of fundamental management planning that sets forth operational objectives which are realistically attainable with available resources. As a result, extension personnel, for example, are often spread so thinly that it is difficult to determine if they are making a significant contribution to any sector goals; small research staffs too frequently are mandated to divide their efforts ineffectively among a wide range of row crops, livestock, and orchard crops which are beyond budgetary and staff capabilities and often are not superior in profitability to current farmer practices. Similar situations exist with credit banks and marketing boards. In addition to this frequent lack of management focus, there are often situations where management support systems such as accounting and financial reporting are woefully inadequate,

as we observed in several credit institutions and marketing boards.

2. The institutions serving agriculture are frequently constrained by the limited technical training of their staff. Although almost every island has a small core of relatively well trained technicians, the majority of the operational staff are characterized by limited formal technical training and provincial experience. Frequently, as might be expected, the most technically trained staff members hold positions that require them to dedicate significant proportions of their time to administrative concerns which have little to do with accomplishing agricultural development objectives. Thus, the individuals most qualified by training to promote better agricultural technology are those with the least exposure to farmers and other operational personnel.

3. There seems to be a lack of effective coordination and linkage among the institutions serving agriculture on all the islands. Typically, research priorities are not coordinated with extension requirements, plant propagation units are not equipped to provide the seedings needed in orchard expansion schemes, marketing boards are not effectively coordinated with production credit activity, and input supplies arrive late. Numerous other examples could be cited. The origins of this serious problem are probably multiple, but poor coordination clearly is rooted in a lack of tightly focused project planning, realistically conceived in the light of limited resources available.

G. INFRASTRUCTURE

1. Lack of Good Rural Access Roads

Significant improvements in physical infrastructure have been made in most of the islands during the past decade. With assistance from international donors, a number of airports, road improvements, deep water ports, and similar

projects have been completed or are ongoing. Nevertheless, rural access roads and tracks are still less than satisfactory in the Windward Islands, where they constitute an important constraint to agricultural development. Rural roads appear to be much less of a problem in the Leeward Islands and Barbados.

2. Lack of Inter-Island Transport

Probably the most serious infrastructural constraint to regional trade and efforts to rationalize production among the islands is the absence of regular, frequent, and appropriate transportation services for agricultural produce in the Eastern Caribbean. Air freight capacity on the regional airline is extremely limited and can be economic only for a small number of specialized, high-value commodities. Even so, complaints of inappropriate handling and unreliable schedules were cited as significant constraints to using this limited air transport service. Sea transport on a scheduled basis is not available to most islands. The independent vessels that service the islands on a nonscheduled basis almost never have the refrigerated facilities needed for many agricultural commodities. We believe that unless some action is taken to establish a regular and reliable transportation service among the islands, with appropriate facilities for perishable commodities, the dream of increased food production for regional markets will never be realized.

3. Deficiencies in Communications

Along with the lack of an intraregional transportation infrastructure, there is a problem of communications infrastructure. While the hardware seems to be in place, so that it is relatively easy physically to send and receive messages between islands, there appears to be little experience in the "software" of communications. Particularly needed are systems for com-

municating information on market prices and volumes, grades and standards, and other information required for increased agricultural trade.

Both the development of transport services and marketing information systems are probably beyond the financial capabilities of any single island. Therefore, a regional approach to these problems seems appropriate.

H. PRODUCTION AND DISTRIBUTION COSTS

1. Low yields, a reflection of poor land quality and/or poor cultural practices, mean high production costs per unit of output because of the unfavorable ratio of output to inputs of land, labor, and capital. Soils and other natural resource constraints were described above. Poor cultural practices often may be attributed to lack of farming experience. This is especially true for former cane laborers whose decision-making experience had been limited to their small garden plots where the technology employed was primitive. Extension services often have been of little assistance to these farmers, since the experience of many agents has been restricted to sugarcane and to cotton, another crop that has declined in importance. Available research results and other information on food crops have not always been profit-oriented, and even when it has been it has not been transmitted to farmers. Moreover, research has neglected intercropping and other practices of small farmers, the improvement of which could significantly increase yield and improve benefit/cost ratios.

2. Farm labor is expensive, as negative attitudes restrict supply and the attraction of high urban wages leads people to prefer job seeking in the cities, even at a high risk of unemployment, to low-wage work in agriculture. Strong labor unions also contribute to the high cost of rural labor in some countries. While labor costs are high, labor productivity

is generally low. It is doubtful that governments in the region will encourage lower production costs by allowing real wages in agricultur to fall; the commitment to keep them at present levels is very strong, even when this has a negative effect on employment. A more promising approach to lowering production costs is to make labor more productive by more effectively combining it with other inputs.

3. Fertilizers and other chemical inputs, all of which have to be imported, are expensive. Transportation and distribution costs are higher than for many other importing nations because of the small quantities of many inputs demanded by any particular country. Little can be done to change this situation, and the prices of these inputs will continue to be determined largely by world market conditions.

4. Fascination with advanced technology also contributes to high production costs. The Survey Team visited livestock projects where the investment costs of pasture development, fences, and water storage tanks could have been significantly reduced by using less sophisticated but still productive technology. Tractors are much in demand, and we may speculate that this is so simply because they reduce the need for hard physical labor. Little if any effort has been made to determine, e.g., if land preparation can be done more cheaply with oxen than with tractors.

5. Marketing margins appear to be high. This is frequently attributed to the exploitation of farmers and consumers by private-sector intermediaries ("hucksters"), but there is evidence of high margins even when produce is sold to government marketing boards (which nevertheless operate at a deficit in all but one case). It would appear that high marketing margins are primarily a reflection of high exchange costs, attributable to low volumes

and poorly organized distribution channels; but a detailed study of the entire marketing chain would be needed to test this hypothesis.

CHAPTER III

AN APPROACH TO RURAL DEVELOPMENT IN THE EASTERN CARIBBEAN

Given the short time span spent in the region by the Survey Team, the complexity of small-farm agriculture, and an incomplete understanding of future plans of other donors, it has not been possible to prepare AID project development proposals in PID form. We have, however, been able to develop a strategy for the region's problems which we feel will respond to the felt needs of both Governments and small farmers and make the region's agriculture more dynamic.

Although officials in individual countries frequently requested bilateral assistance, we believe that the scope for bilateral programs or projects is restricted by the small size of the countries, their limited short-run absorptive capacity, the technical and managerial capacity of public institutions, and the present nature of small-farmer agriculture. Many of the basic problems and technical assistance needs, for example, are common to most, if not all of the islands and can be resolved more efficiently through regional projects--implemented through regional institutions supported collectively by the various Governments--than through bilateral projects having limited benefit to any one island. Also, given the very large and growing food import costs--probably more than US$100 million in 1976--a significant increase in intraregional trade and food interdependence would be desirable. This appears economically feasible and can best be attained by encouraging cooperation among the islands. In summary, the costs, limited benefits, and managerial problems of establishing bilateral assistance programs are outweighed, in the Team's opinion, by

the potential gains from regionally coordinated efforts emphasizing exchanges of experience, cooperation, and avoidance of duplication. Thus, our proposed strategy focuses heavily on reorienting and expanding the relevance and outreach effectiveness of existing regional institutions, in collaboration with national counterpart agencies, to meet the needs of AID's target group.

During the field trip, the Survey Team, in order to develop a perspective on which strategy options could be developed, met with a broad range of public officials including Ministers, Chief Agricultural Officers, and staff members of research, credit, marketing, extension, land titling, and fisheries agencies. We also visited both small and medium-sized farms, talking with farmers and hucksters. We were generally impressed by the frankness and general technical competence of senior officials. We were also constantly reminded of the serious lack of managerial skills, the need for technical training of secondary-level technicians, and the desirability of improving both public policies and financial support to rural sector development. Also of note was a general lack of appreciation of the income and employment potentials of small-farm agriculture, an outlook that was manifest in Government agricultural policies. For example, most public credit institutions have made few loans to small farmers; research is generally conducted on experiment stations not representative of most farm situations; researchers are "doing their thing" irrespective of small farmer needs; extension services, though relatively large, are not reaching farmers with improved profit-making recommendations and are carrying out a range of other service funcitons (e.g., distributing payrolls, collecting taxes and census data) that decrease their overall effectiveness; and marketing institutions, often seriously in debt, sometimes dump large quantities of food held beyond

its shelf life because of poor management, inadequate facilities, or inappropriate policies.

In examining the situation of the region's farmers, the Survey Team found numerous contrasts with our experience in Latin American countries. Many of these differences have major implications for developing an appropriate AID strategy. Most were identified and briefly described in the previous chapter. We do, however, wish to stress our belief that more intensive research is needed to better understand the effects of the region's rural cultural heritage; the implications of increasing Government participation in the economy; different public-sector mechanisms for land control; and the implications of tourism, emigration, and remittances on small farmers' decision-making. The nature and influence of these factors on rural residents will have profound implications for the design and implementation of regionally coordinated programs funded by AID. These issues, we believe, should not be dealt with through separate, isolated studies. Rather, they must be addressed in both economic and anthropological terms within each project and program carried out with U.S. assistance. To the extent necessary, each proposed regional program must have the flexibility and sensitivity to adjust to differences among islands and to the rapidly changing economic and social conditions in the Caribbean region.

Because of the relatively modest technological development of the rural sector, and the serious problems of many of the region's public and private institutions, the Survey Team believes that primary emphasis initially should be placed on gaining first-hand field experience, improving our understanding of development options, training local technicians, strengthening institutions and reorienting their focus, and encouraging regionwide cooperation. The capacity

effectively to utilize large amounts of loan funds will be extremely limited until a strong institutional and human-resource base is developed. Therefore, we strongly recommend that the Agency consider a higher level of grant assistance during the next 5 years than would be justifiable in countries which have received AID assistance for many years. This will be necessary in order to work from within the institutional system and to create a rapport and environment in which changes can be made in public sector financial and outreach support to small farmers. There appears to be an unusually high willingness on the part of the Governments and regional institutions for such an approach. We repeatedly were told that Ministries wanted more rapid change and needed assistance from AID to help them better understand policy options and their implications. Government officials requested assistance from U.S. technicians, as rapidly as possible, not as "advisors," but as participants or working collaborators in implementing new programs and projects while their personnel gain the experience as well as the technical and managerial capacity to assume full responsibility for future efforts.

Regionally, the Caribbean has several institutions, jointly financed by the individual Governments, which can be strengthened to play key roles in evolving a more dynamic rural sector. Undoubtedly the strongest and most appropriate at this time is the Agricultural Division of the Caribbean Development Bank (CDB). This institution, which already is a major force in promoting rural sector change, can be expanded and molded as a powerful tool both for making policy changes and for implementing new programs directed toward the small farmer. The present Integrated Agricultural Development loan is an important part of an overall strategy placing greater emphasis on small farmer credit and using crop liens rather than conventional mortages for security. CARDI and the UWI have the potential to promote regional cohesiveness and to provide

senior technical talent for putting existing knowledge to work on small farms through a revitalized extension system and reoriented research network. The new Caribbean Food Corporation (CFC) with technical support from the Inter-American Institute for Agricultural Sciences (IICA), can be utilized as a prime mover for rapidly modernizing public and private marketing institutions and expanding their capacity to handle small-farm produce.

In our proposed strategy, the Survey Team has given highest priority to those programs which can:

1. Increase the profitability and employment generation of small farm agriculture

2. Rapidly increase the number of rural residents who can be positively affected by U.S. assistance

3. Break regional and national institutional bottlenecks and improve technical capacities which now constrain change

4. Develop baseline studies and policy alternatives on which further assistance can be soundly projected

5. Create viable new approaches and operational patterns, regionally and nationally, to address key rural sector opportunities and demonstrate that agriculture can be an important way of life for more people in the Eastern Caribbean

6. Contribute increasingly to substituting locally producible food, at lower production costs and higher per-area profits, to meet the region's expanding demand

No one project, of course, can meet all of the above criteria. Each, however, can address directly or indirectly two or more of these key

considerations. In time-phasing the components of the proposed strategy, the Survey Team has given first priority to programs which we believe can have an economic impact on large numbers of rural residents, for which there is a felt need, and for which technical capacity exists and can be mobilized. A high priority is also given to those studies and analyses which can be carried out in a reasonably short time frame and can establish a base for expanded loan or grant programs within the next 4 years.

FY 1978 Initiatives

In FY 1978 the Team proposes 4 grant activities and one loan. These are in Agricultural Credit (grant), Regional Cropping Systems Research (grant), Regional Marketing Systems Improvement (grant and loan) and Coordinated Sector Assessments (grant).

The status of national development banks throughout the region is extremely precarious. Many of these institutions are in financial difficulty, are incapable of handling large numbers of loans, and have insufficiently trained staff. Technical assistance must be provided to move these institutions toward financial viability and to enable them more rapidly and effectively to use AID and local funds to meet small farmers' needs. We propose a major grant technical assistance program, channeled through the CDB, to (1) reorganize the national credit institutions, (2) train their staff through short courses and on-the-job training, and (3) assist them to expand their outreach to small farmers. The project director, based at the CDB, would serve for 4 years, and 4 resident advisors (each covering 2 countries) would serve for 3-year periods. Short term advisors would be called upon for specialized training and assistance. This technical assistance program will cost an estimated U.S. $1,600,000.

The Regional Cropping Systems Research project will have as its primary objectives: (1) the development, from existing technical, marketing, and production-cost information, of state-of-the-art technological packages for selected commodities producible on small farms and (2) the organization and implementation of a Regional Applied Multiple Cropping program to develop new technological packages capable of increasing per-area profits and expanding employment opportunities on small farms.

At the present time there are virtually no comprehensive technological packages of production procedures which the region's extension services can extend. Although considerable research as been carried out during the past 30 or more years on specific problems of individual crops and livestock, it has never been brought together and packaged for transfer to farmers. Moreover, research results have been evaluated in yield terms without concern for profit or market potential. One phase of this activity would use available information to determine commodity options and to prepare technological packages for the most promising products in a form usable by the islands' extension services. This phase of the program would consist of a grant to CARDI for a one-year contract with the UWI to carry out the necessary studies. An estimated $150,000 would be needed for professional staff, travel, data collection, and publication of results.

The second phase of this research program would reorganize CARDI's research program from conventional single-crop/single-discipline studies carried out at its UWI headquarters to the development of an interdisciplinary core staff at CARDI and a major outreach program working with individual country researchers in the development of multiple-cropping options resulting from research carried out on small farms. Sub-project activities would include benchmark studies

of small-farm agriculture in various locations on each cooperating island, field experiments conducted on small farms by the national/CARDI country program coordinator, and the development of technological packages for use by the islands' extension staff. The goals would be to increase per-area profit and to expand work opportuniteis for farm families. A doubling of per-area income seems entirely feasible on most small farms. CARDI has already been consulted on this proposed reorientation of its activities and its Director proposed to present this new focus to CARDI's Board on February 3, 1978. Dr. Lewis Campbell, Chairman of the Board of CARDI, has assured the Survey Team of his support. This new CARDI research initiative will require initial AID financial assistance of US$1.7 million for a 4-year period. A link between CARDI and CATIE appears desirable so CARDI may benefit from CATIE's experience in this type of program.

The third FY 1978 activity is in the area of agricultural marketing. Since a major expansion of production in the Caribbean islands will be handicapped by the small size of all the local markets and the extremely limited capability of the national marketing boards, it is imperative that national marketing institutions and the regional marketing system be upgraded rapidly in order to provide alternative outlets for farmers' products.

AID grant assistance in FY 78, channeled through the CFC, will be used to secure appropriate technical assistance services (from IICA or a U.S. university) to work directly with each national marketing corporation to improve the financial, managerial, and policy aspects of country marketing operations. The Survey Team feels this 3-year, grant-funded activity is a key requirement for effective national marketing programs and eventual

regional marketing coordination.

Loan-funded support in FY-78/79 for the newly formed Caribbean Food Corporation (CFC) is also recommended. In addition to being a catalyst for implementing the Regional Food Plan adopted by CARICOM, the CFC will itself provide the financial support and management required to increase directly the volume of food produced in the region. Moreover, the CFC can become an important regional partner institution to the CDB in assuming operational project responsibilities such as managing a regional transport system.

The Survey Team recommends that AID closely monitor and evaluate the ongoing grant to the CDB for studying the feasibiltiy of a small farmer commodity system project. The most important element of this study is to determine the viability of establishing an inter-island transport system for food commodities. The creation of a regular, appropriate and reliable transport system is believed to be the type of infrastructure most needed for agricultural development in the region. Assuming some positive recommendation concerning a regional transport system for food commodities, AID should favorably consider substantial loan-funded assistance to encourage its creation in FY 79/80.

Proposed marketing program activities in the Eastern Caribbean may be summarized as follows:

Regional Marketing Corporation Technical Assistance (FY 78)	US$1,515,000 (grant)
Caribbean Food Corporation (FY 78/79)	10,000,000 (loan)
Small Farmer Commodity System (FY 79/80)	10,000,000 (loan)

The fourth FY 1978 grant program proposed is the development of (coordinated) Agricultural Sector Assessments in each country. This exercise, to the extent possible, should involve national planners and Ministry of Agriculture staff in order to help them better evaluate their development options. However, since 5 of the 8 states have made considerable recent advances in developing national plans, the Survey Team believes that the primary short-term purpose of this activity should be the improvement of AID's understanding of Caribbean agriculture and a consequent clarification of future assistance alternatives. Over the next 18 months, technicians working on the sector assessment will extend the insights gained by our Team, improve our overview of the region, and identify alternatives for increasing national and regional self-sufficiency in food items produced on small farms. The sector assessment should also include an attitudinal survey of small farmers to determine their aspirations and constraints and to determine potential areas where U.S. assistance can help improve their well-being and their zest for rural life.

It is estimated that this regionally coordinated assessment will cost U.S. $370,000. We would expect that the more basic analytical effort could be handled by AID in collaboration with the UWI. Subcontracts for specific elements of the study might be handled by CARDI, CDB, CFC, and IICA (the latter under its new regional AID project in sector assessment and analysis).

FY 1979 Initiatives

Building on the experiences gained in working with key regional and national institutions in FY 1978, the FY 1979 program, through 4 grant activities, will focus directly on reaching large numbers of farmers. Specifically, it will seek to stimulate farmers to learn profitable farming methods and adopt new production techniques; take advantage of opportunities in onshore, small-operator marine fishing; initiate a study of the region's serious water problems and their potential solution; and initiate training to strengthen the region's analytical and physical planning capability and to develop loan proejcts for consideration in FY 1980.

One of the most striking observations made by the Survey Team was that relatively few small farm operators were doing a good job of farming and earning a reasonable profit. The potential for increasing their incomes is considerable. There is also great potential for raising the incomes of the many full-time and part-time farmers whose crop and livestock operations are not very profitable. Greater productivity would also increase local food supplies.

The proposed extension program would reorient UWI assistance from a single annual short course in extension methods to an expanded role involving assistance in reorganizing national extension programs and training of extension staff in the profitable production of a range of crops. The technological packages to be used as the main thrust of this new initiative in creating an expanded number of viable family farms will be those developed by the UWI through the FY 1978 grant to CARDI described above. In addition, an expanded training program for young extension agents, and greater use of

news media, following the experience of the Basic Village Education program in Guatemala, will be planned and implemented to support the family-farm concept. All of the islands reported that they have free access to more time on Government radio stations; however, few are now conducting more than a single half-hour program weekly. The goal of this extension activity, by the end of the third year, will be to reach at least 1,000 farmers per cooperating country with short courses, field demonstrations, and a daily 15-minute radio program. This will strengthen existing family farms and convert an increasing number of part-time farms into profitable, full-time family farms.

As a second grant initiative in FY 1979, we propose the development of a planning and project development program. This initiative, to be administered by the Caribbean Development Bank and the University of the West Indies, in cooperation with national planning groups and the Ministry of Agriculture, will:

1. Train a cadre of national planners and agricultural officers in the methods, procedures, and analysis required in identify national production options in which large numbers of full-time family farmers and part-time farmers and rural poor can participate

2. Assist national planners to develop bankable projects in integrated area development, coordinated production schemes, and marine fisheries programs

Assistance for up to 5 years, involving considerable participant training, would be appropriate for some countries. In these cases the development of sophisticated project preparation skills would be a long-run objective, and the initial emphasis would be on the acquisition of basic skills in

planning and program formulation.

Water availability for agricultural and other rural uses has been identified as a major limiting constraint in both the Leeward and Windward Islands, with the possible exceptions of Dominica. Lack of water significantly reduces the potential use of the region's limited agricultural land.

Various studies of the region's sub-surface and groundwater resource potential have already been conducted. These studies, which were consulted only briefly by the Survey Team, should be thoroughly studied before any new initiatives in this area are developed. This analysis, together with supplemental field work, should yield an economically and technically sound plan for future programs to improve the conservation and efficient use of water. Because of the potentially high capital requirements, this strategy should be discussed with other donors, including CDB, BDD, and CIDA, to ascertain which elements these agencies would be willing to support. By FY 1980 AID would be in a position to undertake those activities which support its overall strategy and assist its target population most effectively.

The third element in the FY 1979 program strategy involves an in-depth analysis of onshore marine fisheries. At present, the fishing industry in the region involves an estimated 7,000 part-time and full-time fishermen and an additional 2,500 persons--largely women--in the distribution system. Improvement of equipment, better marketing arrangements, and credit could double their incomes and expand the fishing season from 6 to at least 9 months for the migratory species (flying fish, dolphins, kingfish, and albacore). At this time it appears that local supplies of high-protein food products could be obtained at lower cost from marine sources than from small animal production.

Considerable research on fisheries has already been carried out by the FAO, BDD, CIDA, and the Ministry of Agriculture in Barbados. An analysis of all existing information, and limited further surveys, should permit an identification of the most promising approaches for future AID grant and loan support. This 18-month study, conducted through the CFC with CDB collaboration, will cost an estimated US$150,000. A follow-on loan, projected for FY 1981, may include secondary assembly stations, boat construction, cold storage of fish at sea, and drying facilities. There is also a potential, we believe, for a regional approach to the controlled harvesting of marine species to maintain the long-term viability of this important industry.

FY 1980 Program Strategy

Livestock, fruit trees, and spices are longer-term opportunities important in expanding the local supply of proteins and other foods, earning or saving foreign exchange, and providing employment in areas in which more intensive crop exploitation is not possible. For FY 1980 the Survey Team proposes 2 projects to meet the needs of part-time farmers and to provide more options for small family farms.

Literally tens of thousands of cattle are raised for beef and dairy production in the region. There are also large numbers of sheep, chickens, and goats. Some animal products are consumed at home, but livestock production also provides a supplement to family income and serves as a form of savings. Production, however, is genreally inefficient. Too often, weight gains made during the rainy season are lost because of feed shortages and the absence of hay and silage in the dry months. Small animals appear to have greater market potential, but indigeneous feed rations

are not produced and the high cost of imported feeds often makes local production economically unviable. The primary focus of the animal program will be to bring together available production information for transfer to farmers through the extension services. Additional research will be required in introducing and adapting feedstuffs so as to increase the locally available animal feeds for cattle and small animals.

Tree fruit crops and spices are just beginning to receive consideration as a means of expanding the economically exploitable areas in several island states. Some assistance has been provided by the FAO and the BDD. Elsewhere in the region this potential is not yet a major consideration in national planning.

In the field of horticulture, technical expertise, analysis of market potential, viable technological packages, production plans, and marketing schemes have yet to be developed. Some research has been undertaken by national governments (Antigua, Barbados, Dominica, and Grenada) on which to base these initiatives. Further AID assistance in this area must be coordinated with existing BDD projects in Antigua and FAO projects in Grenada.

The development of these 2 FY 1980 projects, we feel, should be carried out through regional initiatives, with CARDI as the primary agency. We anticipate that the Regional Animal Systems project will require 4 years and a total AID contribution of US$1.5 million. The Regional Horticultural Research project will require 8 years for completion of the first phase of the research program, multiplication of improved fruit and spice varieties, and transfer of recommendations to the extension service.

The 4 CARDI projects in cropping systems, animal systems, and horticulture will enable this institution to develop a new capability in improving

small-farm systems. Better farming systems can result in a quantum increase in small-farm income through such practices as using production wastes as animal feed, utilizing farm manure, and intercropping tree crops with forage crops, thereby increasing land-use efficiency and expanding food production capacity.

FY 1981 Program

Several major loan possibilities, building on the programs carried out in previous years, should be considered for 1981:

--- The water resources study is likely to identify a loan project, appropriate for implementation through the CDB, for dam construction, catchment systems, and irrigation projects.

--- The analysis of the fisheries potential of the region could result in a loan to respond more actively to needs in this important area.

--- A second tranche for the CDB's Agricultural Production Credit program should be needed by this time.

--- With the experience gained through various studies, and further clarification of political trends in the region, serious consideration should be given to some type of land purchase guaranty fund for the subdivision and sale to small farmers of estates not efficiently used by their present owners. We do not feel that this area should be addressed earlier, since the BDD apparently is considering assistance to several islands for land purchases.

Specific Projects

In the following pages we present brief descriptions of 17 loan- and grant-funded projects recommended for FY 1978-FY 1981. These summaries include the proposed loan (grant) amount, the estimated counterpart contribution, and possible assistance by other donors.

A. NATIONAL CREDIT AGENCY DEVELOPMENT

AID Grant __x__ Loan _____: US$1,300,000

Counterpart Contribution : US$ 450,000

1. Situation

Each of the eight countries visited has a public development finance corporation (DFC) to which Government funds are allocated for payment of operating expenses and for the provision of credit for agricultural, industrial, and other economic activities. The DFCs also borrow loan funds from the Caribbean Development Bank (CDB).

With the partial exception of the Barbados Development Bank (BDB), the DFCs in the region have a number of serious institutional weaknesses. These include (1) inadequate--sometimes nonexistent--training and experience of DFC managers and other key staff members in development banking; (2) insufficient loan documentation and poor loan supervision; (3) inadequate accounting systems; (4) weak loan recovery procedures; and (5) low interest-rate policies which preclude the possibility of institutional viability and growth without continued Government subventions.

2. Proposed Program

The Survey Team recommends that a large-scale technical assistance project, grant-financed and channeled through the CDB, be undertaken to help the DFCs overcome their institutional weaknesses and move toward financial viability. Probably in all cases, the DFC managers should be sent abroad for academic training and/or internship programs in development banking. Four resident advisors covering a second country in addition to their base countries would be needed for a period of three years to provide assistance in accounting, lending criteria, loan supervision, loan

evaluation, management systems, and policy formulation. The services of the project director, based at the CDB, would be extended for an additional year to provide follow-up assistance. Short-term training within the region, of perhaps two-months' duration, should be provided to loan officers to improve their skills in project preparation and loan supervision. Two such training courses should be provided, one year apart, so as not to deplete the DFCs of all their loan officers at any one time. Funds should also be available for short-term consultants on specialized problems in development banking or in specific types of agricultural loans.

3. Other Donor Assistance

The CDB, through which this assistance program would be channeled, already provides technical assistance to the DFCs in the form of a resident Farm Improvement Officer (FIO) in most of the seven LDCs in the region. A continuation of this type of assistance would be desirable, with the FIO assuming most of the responsibility for supervising the field activities of the loan officers.

4. Budget Breakdown (Estimate)

1 project director, 4 years	US$ 300,000
4 resident advisors in development banking, 3 years each	900,000
1 resident regional advisor, 2 years	150,000
Training of 8 DFC managers, average of 9 months	80,000
2 short-term (2-month) courses, each for approximately 12-15 loan officers	75,000
Short-term consultants	45,000
On-the-job training materials, equipment, etc.	50,000
	US$1,600,000

B. REGIONAL CROPPING SYSTEMS RESEARCH

AID Grant __x__ Loan _____: US$1,500,000

Counterpart Contribution : US$ 575,000

1. Situation

The present agricultural research network in the Caribbean is a combination of national programs emphasizing specific production problems and regional research carried out by the UWI, WINBAN, and CARDI. Almost all national and regional research, other than that carried out by WINBAN on hananas, is conducted on experiment stations by small, overextended research groups. Research designs are usually influenced by the particular expertise of the investigators or their personal perception of farmers' needs.

Historically, individual States have depended on the UWI to conduct more basic research, which is transmitted to national technicians by periodic (usually annual) visits of UWI technicians to the Windward and Leeward Islands. All linkages with international research centers--presently very limited in scope--are channeled through the UWI.

In 1974 the Eastern Caribbean countries created the Caribbean Agricultural Research and Development Institute (CARDI) to provide more direct assistance to member countries in solving key agricultural problems. Unfortunately, during the first several years of its existence, CARDI's operating style and types of investigations have differed little from the traditional UWI format. In Trinidad, UWI and CARDI have done valuable work in variety studies, soil mapping, pest control, and spacing experiments, but the utility of this research to national development programs has been limited. Too often research conducted both on national experiment

stations and at the regional institutions does not address the key production constraints faced by the region's farmers. Moreover, there has been a tendency for the UWI and CARDI to compete in research as well as for donor support.

A committee appointed by CARDI and the UWI has studied the regional research situation and recommended to the CARDI Board that CARDI assume responsibility for complementing and supplementing the applied research programs of member States and assist in planning and promoting the development objectives of the member States. The UWI would be responsible for research of a more fundamental nature which will provide the foundation for applied research or developmental projects.

2. Proposed Program

If research in the Eastern Caribbean is to provide the required knowledge to increase farm income and employment in member States, both national and regional programs must become more relevant to farmers' needs and to national as well as regional priorities. A new approach to farm problem solving appears necessary, especially since multiple cropping is a significant if not the dominant approach to land utilization on smaller farms.

The objectives of this new initiative will be to:

1. Develop interdisciplinary technological pakcages relevant to increasing farm incomes and employment through new multiple cropping systems

2. Improve the regional and national applied research capability

3. Develop a regional research technical advisory coordinating council to focus future research on priority production requirements and exchange technological information within the region.

CARDI, the primary organization through which this new project will be directed, will organize a regional technical advisory committee composed of the Chief Agricultural Officer or directors of research departments of participating countries. This committee will:

1. Meet quarterly to review proposed research programs and to make technical and budgetary recommendations to CARDI's Board

2. Make recommendations to CARDI's Director and nationally support this new reserach initiative

3. Serve as the linkage between national research, extension, credit, and marketing agencies to assure the best utilization of the program's research

CARDI will reorganize the research activities of a portion of its research staff, creating a core research group to work as an interdisciplinary team providing technical support in certain research areas and administering the technical execution of the program.

To obtain assistance in reorienting its research effort, CARDI will subcontract with CATIE in Turrialba, Costa Rica, which has more expertise in this type of research than any other institution in Latin America. CATIE will train CARDI's staff and transfer the methodologies developed in its Central American program for adaptation to the Caribbean situation. For the initial two years, CATIE will use AID project funds to assign a senior researcher to serve as program advisor to the Director of CARDI.

One direct-hire or AID-funded CARDI technician will be stationed in each cooperating country to serve as project manager. He/she will have at least two national researchers or senior extension technicians assigned as counterparts. The locations in which the program will be carried out will

be determined by the cooperating country but must contain large numbers of small farms in an ecologically homogeneous region. Because of the four-year time constraint on this initial project, research will concentrate on developing production systems for basic food crops, tubers, and vegetables in intercropping and sequential patterns.

All field research in new areas will be preceded by a baseline socio-economic and agronomic analysis of small farm agriculture. This analysis will define the present status of small farmers' labor and capital inputs, production practices, farm size, and marketing conditions.

New research will be designed to at least double income per area farmed and to increase employment by 20 percent. All field experiments in national programs will be carried out on small farmers' fields, with farmers involved in the execution of the research.

The core staff will collaborate with national counterparts and national research managers. They will be required to travel to the member countries to collect data periodically on all field experiments and to train national counterparts in proper experiment management. All data will be analyzed by CARDI and the results conveyed to the national teams.

Technological packages will be prepared by CARDI technicians and their counterparts and conveyed to national extension service leaders in national as well as regional forums.

3. Other Donor Assistance

Several research activities currently supported by other agencies could be coordinated with the proposed project. These include an FAO program in Grenada, a Commonwealth technical assistance effort in Montserrat, and the

UWI's fundamental applied research program. Also relevant would be the $1 million-plus program now being considered by the European Community to expand the number of CARDI research stations and provide additional equipment.

Valuable assistance could also be provided by Peace Corps Volunteers (PCVs). In each cooperating country, two to five PCVs could be assigned to assist with field research activities. Planting materials could be supplied by CIMMYT (corn) and CIAT (manioc and beans).

4. Budget Breakdown (estimate)

a. Personnel

CATIE contract: $75,000/yr. for initial 2 years; $25,000/yr. for last 2 years	US$ 200,000
National project managers: 4 at $40,000/yr. each for 4 years	640,000
Short-term consultants	120,000
Staff Costs:	
3 Secretaries: $5,000/yr. each for 4 years	60,000
1 Publications technician	60,000
2 Data clerks: $5,000/yr. each for 4 years	40 000
1 Documentation assistant	30,000
Occasional labor	100,000
Subtotal	$1,150,000

b. Transportation

5 Pickup trucks (4-wheel drive)	$ 35,000
1 Station Wagon	7,000
Office equipment	30,000
Research computer	35,000
Subtotal	$ 107,000

c. Other Costs

Publications	$ 10,000
Office supplies and materials	20,000
Chemicals and experimental seeds	75,000
Communications (cable/telephone)	40,000
Soil and plant analyses	25,000
Transportation	150,000
Vehicle maintenance	50,000
Subtotal	$ 420,000
Total	US$1,677,000

C. CARIBBEAN FOOD CORPORATION

AID Loan x	:	US$10,000,000
AID Grant x	:	US$ 600,000
Counterpart Contribution	:	US$ 4,100,000

1. Situation

The Caribbean Food Corporation (CFC) is a newly created corporation designed to help implement the objectives of the CARICOM Food Plan. Accordingly, the CFC will identify, promote, plan, finance, and manage commercial agricultural production, processing, or marketing projects which (a) contribute to food self-sufficiency and (b) improve human nutrition within the region.

To succeed in its mission, the CFC will need capital to finance subprojects and technical assistance to organize and perform project development and implementation activities.

2. Proposed Program

The Survey Team recommends that AID provide at least US$10 million in loan funds for CFC subproject financing over a four-year period. Also recommended is a grant to fund eight work-years of long- and short-term technical assistance to the CFC over a four-year period beginning in FY 1978 or FY 1979.

3. Other Donor Assistance

At this time, no other donor assistance to the CFC is known to be under consideration. The CDB is expected to play a key role in performing feasibility studies and financial analysis for the CFC during its first years of operation. Joint ventures with private sector firms will be encouraged.

4. Budget Breakdown

CFC Development Loan	:	US$10,000,000
CFC T.A. Grant	:	US$ 600,000

D. AGRICULTURAL SECTOR ASSESSMENTS

AID Grant x Loan _____ : US$370,000

Counterpart Contribution : US$130,000

1. Situation

The present document has done little more than identify the major constraints to agricultural development in the Eastern Caribbean. The development of sound project proposals, and an analytical review of policy alternatives, require that these constraints and their interrelationships be examined in more detail. This can be accomplished through agricultural sector assessments, which could serve as the first stage of the agricultural planning, programming, and project development assistance effort recommended below. Sector assessments would also serve as basic documents for AID country programming.

2. Proposed Program

We would argue that an integrated regional assessment would not be appropriate. Below the surface of the region-wide generalizations made in the previous chapter, there are significant differences among the eight countries with respect to natural resources, crop patterns, institutions, etc. This calls for separate treatment of their development problems and prospects. On the other hand, the islands have enough in common to call for coordination among the individual country assessments, particularly with regard to matters affecting credit, research, extension, marketing, and intraregional trade.

The effort required to carry out some type of sector assessment for all eight countries would not be as great as might be imagined. In the first place, five of them (Barbados, Dominica, Grenada, Montserrat, and St.

Lucia) either have recent agricultural sector plans or are about to complete them. All eight have conducted agricultural censuses within the last 6-7 years. Thus, much of the descriptive information needed for sector assessments is already available. Secondly, the small absolute size of the agricultural sectors in some countries (Antigua, Montserrat) and the heavy concentration on sugar in others (Barbados, St. Kitts) limit the scope of the assessments. Thirdly, detailed information on research, extension, marketing, credit, and intraregional trade should be collected on a regional basis in connection with the preparation of regional projects in these areas. To the extent that this information is available while the sector assessment documents are being prepared, it can be incorporated into those documents. Otherwise, the sector assessments need not discuss these areas in great detail, and the emphasis should instead be on the identification of projects confined to a particular country.

For several reasons, sector assessments for the Windward Islands should be more detailed than those for Barbados and the Leeward Islands. First of all, agriculture accounts for a higher share of both employment and income. Secondly, per capita incomes are lower. Thirdly, prospects for increased agricultural production and diversification appear to be greater.

Still, there are good reasons for doing sector assessments in the other countries, even though these may be more limited in scope. Both Antigua and St. Kitts would like to have assistance in the areas of agricultural planning and programming, and sector assessments would be necessary for these efforts. The Government of Antigua has indicated a willingness to provide 3-4 counterpart technicians for an assistance program in this area (which would include a longer-term effort in planning and programming). A

sector assessment for St. Kitts would be valuable to have in hand in the event that the sugar industry there collapses and emergency planning for alternative uses of agricultural land is necessary. Barbados, too, faces an uncertain future in sugar, and there seems to be good potential for developing major projects involving other crops and livestock. Finally, a sector assessment in Montserrat could help that government clarify its present (unclear) policies toward agriculture. For this to be accomplished, however, Montserratian technicians need to be more closely involved in conducting the sector assessment than they appear to have been in the preparation of the recent agricultural sector plan.

To carry out the sector assessments, we recommend the following arrangements:

a. An agricultural economist should be stationed in one of the Windward Islands for 12 months to supervise and coordinate preparation of the sector assessments for Grenada, Dominica, St. Vincent, and St. Lucia. Local technicians should be intimately involved in these assessments, and they are capable of making important contributions. Short-term consultants will have to be called in, particularly in the areas of soil and water conservation, forestry, and socioeconomic data collection. As noted above, information on credit, marketing, research, extension, and intraregional trade should be collected in separate exercises related to regional project preparation. Primary data collection is needed to fill two glaring gaps in the census data: (1) information on rural incomes and (2) cost-of-production/profitability studies. In addition, a survey of farmer attitudes should be undertaken to help policymakers understand the major policy constraints to agricultural development as viewed by farmers.

b. A second agricultural economist should be stationed in one of the Leeward Islands for 12 months to supervise and coordinate the preparation of agricultural sector assessments in Antigua, Montserrat, and St. Kitts and to provide assistance in agricultural planning/programming to the Ministries of Agriculture in those countries. Primary data collection, as described above, would again be needed.

c. A sector assessment for Barbados could be directed by a nonresident-based technician, in collaboration with Barbadian technicians, and completed within 6-8 months. If the sector plan now being completed proves to be sufficiently detailed, a sector assessment might not be needed. The technician directing the sector assessment for Barbados would also serve, on a part-time basis, as over-all project director.

The sector assessment project could be conducted by AID/Washington, using a combination of direct-hire and contract employees. However, serious consideration should be given to seeking a contract with a regional institution such as the UWI.

3. Other Donor Assistance

None

4. Budget Breakdown (estimate)

2 resident agricultural economists, 12 months each	US$150,000
1 project director (6 months full-time; 12 months half-time)	115,000
Short-term consultants	75,000
Other costs	30,000
	US$370,000

E. REGIONAL MARKETING CORPORATIONS DEVELOPMENT

AID Grant __x__ Loan _____ : US$1,515,000

Counterpart Contribution : US$ 750,000

1. Situation

Each of the 8 countries visited has a publicly owned marketing corporation which is actively engaged in buying and selling locally produced food crops. These marketing corporations attempt to dampen sudden fluctuations in market prices and volumes through open-market operations on a commercial basis. Most of these corporations engage in a variety of marketing functions, including purchasing, transport, storage, packing, and retail and export sales.

Without exception, the activities of the marketing corporations have been unsatisfactory, and most are incurring financial losses that threaten the continuity of operations without increased government subsidies. Government officials repeatedly cited marketing as a major problem inhibiting agricultural development efforts. The marketing corporations suffer from several operational and policy weaknesses including: (1) inadequately trained managers and supervisory personnel; (2) insufficient technical knowledge of commodity handling and storage requirements; (3) poor information about and coordination with farmers; (4) inadequate linkages and untimely procedures with potential domestic and external market outlets; and (5) unclear policies that frequently complicate operational decisions and tend to undermine farmer confidence.

2. Proposed Program

It is recommended that a long-term technical assistance project, grant-funded through the Caribbean Development Bank (CDB) or Caribbean Food

Corporation (CFC), be mounted to help the national marketing corporations more efficiently execute their activities and more effectively fulfill their responsibilities. Short-term training courses or workshops should be developed for all marketing corporation managers in the region. It is not necessary to send these managers for formal academic training; rather, what is needed is a series of 2-week marketing management courses held in the region 4-6 times per year for 2 years. In addition, technical training in food commodity handling, storage, and packing should be offered to skilled operational personnel. Again, this technical training can best be accomplished through a series of short-term training programs held several times a year. The recommended project provides a resident advisor to each cooperating national marketing corporation for 3 years. The resident advisors would be counterparts to marketing corporation managers and would provide assistance in establishing over-all information and accounting systems, developing commodity-specific action plans on a yearly or seasonal basis, promoting contract buying procedures in conjunction with credit institutions where feasible, promoting policy formulation to strengthen private-sector marketing firms, serving as a catalyst to develop training opportunities with other islands in the region, and encouraging participation in any regional market coordiation efforts. The training and resident advisors would be coordinated and supervised by a regional marketing advisor based in Barbados for the duration of the project. Appropriate funding for short-term consultants to conduct selected training and provide assistance on specialized problems would be necessary.

3. Other Donor Assistance

The British Development Division (BDD) has provided selected pieces

of hardware, some buildings, and other facilities to most of the marketing corporations during recent years. The FAO/UNDP has one marketing advisor in Grenada but not on other islands. Little training and technical assistance activity in food marketing has been provided. The CDB, with AID support, is currently studying opportunities for intraregional trade which will be very complementary to this recommended project, but it will not directly address the problems of the national marketing corporations.

The placement of selectively recruited Peace Corps Volunteers would add a needed dimension of "middle-level" management and technical counterparts in the national marketing institutions. A small number of Volunteers are presently working with the marketing corporations in St. Kitts, Antigua, and Grenada. This project could expand the utilization of Volunteers and increase their effectiveness.

4. Budget Breakdown (estimate)

Marketing organization managers: short courses, 2 weeks each x 12	US$ 60,000
Operational personnel: short courses, 1 week each x 12	30,000
5 resident marketing advisors, 3 years each	1,125,000
1 regional marketing advisor, 3 years	225,000
Short-term consultants	75,000
	US$1,515,000

F. SMALL FARMER COMMODITY SYSTEM

AID Loan X	:	US$10,000,000
AID Grant X	:	US$ 650,000
Counterpart Contribution	:	US$ 3,300,000

1. Situation

Perhaps the most important constraint to small-farmer food production in the Eastern Caribbean region, especially in the LDCs, is the small size of the internal market. Development of export marketing opportunities within the Caribbean basin is a fundamental requirement for increased food self-sufficiency in the region and increased small farmer incomes. To secure and keep export markets, the individual islands must formulate a completely integrated production/marketing system, from fixed sites through delivery to the external buyer. Key elements of such a system are now absent in the region. The lack of reliable interisland transportation is of particular importance.

2. Proposed Program

AID has approved a PRP to develop a small farmer commodity system project. The Survey Team recommends that the feasibility studies for this project design be monitored closely and any positive recommendations to establish such a project be considered favorably. At this state the project has two major elements: (a) production subsystems and (b) marketing and transport subsystems. The former would be implemented by the CDB and selected national DFCs, while the latter element would be appropriate for implementation by the CFC. Although this is an ambitious project, we believe the concept has merit and would significantly stimulate agricultural development in the region.

3. Other Donor Assistance

We are aware of no other specific donor assistance, but it is reasonable to assume that significant roles are likely to be played by CIDA, IBRD, and the U.K., given the size of the project. Preliminary discussions have taken place with Peace Corps for using Volunteers in this project.

4. Budget Breakdown (estimate)

a. Loan

Production Subsystems	US$ 5,000,000
Marketing and Transport Subsystems	5,000,000
	US$10,000,000

b. Grant

Training and Technical Assistance	US$ 650,000

G. AGRICULTURAL PRODUCTION ASSISTANCE PROGRAM

AID Loan _____ Grant X : US$1,300,000

Counterpart Contribution : US$ 400,000

1. Situation

Effectively training farmers to increase their incomes through better utilization of available capital, human, and natural resources has been identified as a major requirement for accelerating Caribbean rural development. Only limited numbers of small farms producing other than export crops are presently making a reasonable living for their operators and families. Many farmers seem unaware that major increases in productivity and employment are possible on the limited areas of arable land available in the Eastern Caribbean.

By heritage, most rural people in the region were until only recently employees on large banana, coconut, sugar, and cotton estates. As these plantations became unviable in the 1950s and 1960s, many rural residents became unemployed or were offered rental land to farm. Unfortunately only a few are reported to have been successful farmers thus far.

Food production in the region, as noted in Chapter I and in Chapters IV-XI, is in short supply. In 1976 the 8 countries visited probably imported foodstuffs costing more than US$100 million, a sizable proportion of which could be produced in the region.

Extension services in the region have been operating for many years. Many of these have good agent/rural landowner ratios (e.g. 1 to 400-700), are providing small farmers with technical assistance, and wish to expand their effectiveness. Senior extension officers appear to be well trained technically, but many of their field officers lack agricultural training and do not have well developed, profit-oriented technological packages of

information to transmit to farmers. The existing lack of well-thought-out program planning is a major problem in utilizing extension personnel effectively in the field. Our Team noted that the extension agents were required to perform a number of service functions (e.g. disbursing payrolls, collecting data, issuing hunting licenses) which reduce the numbers of farmers with whom they are able to work. Transportation, too, was almost universally in short supply.

Although all agencies reported that they have used radio broadcasts and had access to increasing amounts of radio time, none was programming more than 30 minutes per week. Lack of properly trained personnel and limited information were given as the primary reasons.

2. Proposed Program

This project will develop a regionally coordinated extension program focusing on the expansion of information transfer by mass media, through production associations and cooperatives, as well as individually to small farmers. The focus will be on extending an increased number of profitable production options through a reorganized and better trained extension development agency in at least 5 States.

The new production packages will be developed by CARDI, with UWI assistance, under AID's proposed FY 1978 cropping systems project. The package will be utilized by the UWI regional extension program as the basis for training national technicians, conducting field demonstrations, and linking extension with credit and marketing agencies.

The UWI extension staff, with AID assistance, will be expanded from 4 to 6 full-time technicians. Their first task will be to conduct such institutional, program, personnel, and organizational studies in each

cooperating country as are required to propose institutional reorganization and separation of agents' developmental and service functions.

Simultaneously with this institutional improvement, short training courses will be conducted in the use of new production systems and information transfer methods to upgrade national capacity. Training will also be given to senior technicians in the development of more dynamic outreach activities to farmers and the linkage of extension with credit and marketing agencies.

Annual program reviews and evaluations will be scheduled and a feedback system to research developed to further improve the profitability of the the new production systems.

Specific goals in direct provision of technical assistance to farmers and in programming increased use of mass media resources will be established for each cooperating country. For the region as a whole, we expect that at least 5,000 farmers will be direct beneficiaries of this project, and the goal would be to raise their incomes by at least 50 percent.

3. Other Donor Assistance

The extension services are now receiving some assistance from other donors. The BDD has provided some equipment and limited technical support for short periods on several islands. The Peace Corps has also provided assistance on several islands in mass media programming and publications. The extent of IICA and CIDA assistance is not known, although IICA has provided short-term support in training courses to the UWI.

We would propose that the role of the Peace Corps be increased in this activity. The Peace Corps could provide trained subject matter specialists in pest management, agronomy, small-farm management, and mass media

programming to each cooperating country to increase national farmer response capability. We would hope that the BDD and CIDA could be encouraged to provide improved transportation, printing equipment, and projection equipment to agents as part of a coordinated program to expand production of basic food crops, fruits, tubers, and vegetables. An estimated US$350,000 will be needed for the purchase of 70 4-wheel drive vehicles, US$35,000 for publication equipment, and US$10,000 for small projection units for group sessions with farmers.

4. Budget Breakdown (estimate - 5 countries over 4 years)

Personnel

4 Service extension specialist (4 years)	US$ 480,000
Short-term consultants (4 years)	150,000
1 Secretary (4 years)	20,000
1 Office assistant	15,000
1 Publication editor (4 years)	60,000
1 Graphic arts technician (4 years)	60,000
Subtotal	US$ 785,000

Commodities

1 Minibus	US$ 9,000
Communications equipment (cameras, projectors, tape recorders, etc.) for teaching and demonstration	30,000
Publication equipment (UWI)	10,000
Miscallaneous equipment	25,000
Subtotal	US$ 74,000

Training

Short courses (4 per year, 30 people each)	US$ 240,000

Other Costs

Travel and per diem (UWI and U.S. short-term)	US$ 100,000
Communications	25,000
Publications	24,000
Other costs	51,000
Subtotal	US$ 201,000
Total	US$1,300,000

H. REGIONAL WATER MANAGEMENT ANALYSIS

AID Loan _____ Grant X : US$150,000

Counterpart Contribution : US$ 50,000

1. Situation

Limited water availability and poor utilization for agriculture constitute a major constraint to development in the Leeward Islands, while better management of water resources for agriculture in most of the Windward Islands presents a great opportunity for increased productivity. Various studies on ground water resources and alternative distribution schemes have been conducted on individual islands by Governments and external donors. Many of these studies, however, were completed before more recent technological advances in trickle or drip irrigation were made. What is needed is a thorough review of past studies of the problem, in the light of new technology, to evaluate the feasibility of mounting projects in water conservation and cost-effective utilization.

2. Proposed Program

The Survey Team recommends that the CDB, with grant-funded technical assistance, undertake an 18-month water resource and management analysis in the region. The objective of this activity would be to develop a general plan for major investments in water resource conservation and utilization. The purpose would be to identify specific projects, at the prefeasibility stage, suitable for a follow-on water utilization improvement loan. We believe this 18-month analysis could be accomplished with one senior agricultural engineer from the CDB and 24 work-months of technical assistance, probably from a U.S. university or consulting firm.

3. Other Donor Assistance

For the proposed analysis, no other donor assistance is contemplated.

4. Budget Breakdown (estimate)

Consultants for 24 work months	US$150,000

I. REGIONAL WATER USE IMPROVEMENT

AID loan x	:	US$10,000,000
AID Grant x	:	US$ 1,000,000
Counterpart Contribution:		US$ 2,000,000

1. Situation

Due to the generally high saline content of sub-surface water in the Leeward Islands, the construction of mini-dams and catchments to c pture rainwater runoff is usually the most appropriate method of securing a reliable so rce of irrigation water necessary for the dry seasons. The relatively high capital cost of such infrastructure, and the low productivity of agriculture as currently practiced, have made irrigation investments unattractive in the Leewards thus far. Nevertheless, significant increases in food production are unlikely without expanded irrigation facilities.

The Windward Islands, on the other hand, enjoy relatively abundant fresh ground water resources and less severe dry seasons. The distribution of water for agricultural irrigation is therefore the greatest problem in the Windwards. Expanded use of irrigation is appropriate and necessary to increase the productivity of the limited flat, first-class lands in the Windwards.

2. Proposed Program

The Survey Team recommends that AID make loan funds available to the CDB for investments in expanded irrigation and water-use improvement projects in the Eastern Caribbean. The size, timing, and nature of this program would depend on the findings and recommendations of the water management analysis discussed in Item H above. However, assuming

sub-project activity in at least 5 islands, an amount of about US$10 million might be appropriate in FY 1980 or FY 1981.

We believe it is important that implementation of irrigation schemes be closely coordinated with other agricultural support institutions, including credit, extension, and marketing. It is therefore recommended that appropriate grant-funded technical assistance be provided to help implement each irrigation sub-project activity, to establish local administration and maintenance systems, and to promote appropriate coordination with other agricultural agencies. This grant-funded technical assistance could be provided by 3 persons for 4 years at a cost of about US$1,000,000.

3. Other Donor Assistance

Because of the probable high capital cost and complexity of water and irrigation sub-projects, vigorous efforts should be made to coordinate and share project elements with other donors. The BDD and CIDA would be likely collaborators, in addition to the IBRD and IDB.

4. Budget Breakdown (estimate)

Loan	
Feasibility studies	US$ 1,500,000
Construction	7,500,000
Maintenance and administration	1,000,000
	US$10,000,000
Grant	
Technical assistance personnel	US$ 1,000,000

J. FISHERIES DEVELOPMENT

AID Grant __x__ Loan _____ : US$200,000

Counterpart Contribution : US$ 75,000

1. Situation

The requirements for animal protein in the Eastern Caribbean presently far exceed the region's productive capacity. Animal production can be significantly expanded, but limited land areas are available to devote to these low-employment, relatively low-income activities. Fish production from onshore sources in the region appears to offer considerable opportunity as an additional means of increasing the local supply of proteins.

Both dried and fresh fish constitute a significant portion of regional diets. Present consumption exceeds production by an estimated 3 million pounds of dried fish and up to 10 million pounds of fresh or chilled fish.

At present there are reportedly more than 5,000 fishermen working part-time or full-time and an additional 2,000 women gainfully employed in cleaning, drying, selling, and distributing fish and fish products in the region. An estimated two thousand 15-30 foot boats are in service, about half of which should be replaced.

Almost all of the Governments in the region have fisheries programs. Some (Barbados, Grenada, St. Vincent, St. Lucia, and Dominica) have one or more technicians helping fishermen improve methods, recording catches, studying marketing procedures, etc. All of the countries with large onshore fishing industries provide concessions (e.g. duty free gas, engines, tackle, specialized boat equipment, etc.) to their onshore fishermen. In Barbados, Grenada, and St. Vincent fishing cooperatives

are operating, and several marketing boards buy and distribute fish in local markets.

At present onshore fishing is largely concentrated in the January-July period when the main flying fish catch is at a peak. In the off-season some fishermen catch lobster, crabs, and other mollusks. Income levels and catches are small because of poor equipment, poor marketing facilities, and improperly designed boats. Some government officials in the region believe that improvement of this industry is imperative and could conservatively double income levels.

Local agencies and foreign donors have made numerous studies of marine resources, fishing methods, etc., but no comprehensive analysis and plan has been developed to project needs and opportunities.

2. Proposed Program

The Survey Team proposes an 18-month analysis of the onshore fishing industry in the 8 Eastern Caribbean countries. This study would be developed through the Caribbean Food Corporation under a subcontract with qualified U.S. institutions. The study would result in:

1. An analysis of the potential for expansion of onshore fishing on a sustainable basis
2. Identification of the improvements needed in (a) boats, (b) fishing equipment, (c) life-saving equipment, (d) fish storage on boats, (e) market systems, and (f) training needed to increase income and employment
3. Recommended additional research needed to further improve onshore fishing

4. The development of a coordinated technical assistance program to modernize the industry.
5. A prefeasibility study for a loan for fishing and fish marketing improvement.

3. Other Donor Assistance

The European Community is providing Barbados capital to construct a main fishing port (BD$1.2 million). CIDA reportedly is considering a program in one of the other islands for constructing boats, teaching fishermen new methods, and improving the marketing system. These other donor programs will require further analysis before an adequate design can be developed.

4. Budget Breakdown (estimate)

Contract study of current situation, preparation of new program, and prefeasibility study for future loan.	US$200,000

K. SMALL OPERATOR FISHING

AID Loan X	:	US$10.0 Million
AID Grant X	:	US$ 1.0 Million
Counterpart Contribution	:	US$ 2.0 Million

1. Situation

It is anticipated that the Fisheries Development study will identify a need for a $10.0 million loan to improve the effectiveness of this industry.

The AID loan would be administered by the CDB, and a counterpart contribution of US$ 2.0 million would increase the project total to $ 12.0 million. The loan would be made available to national government institutions for relending to fisherman for new boat construction; purchase of nets, motors, and similar equipment; re-equipping part of the existing fleet with cold boxes using flake ice so that the catch can be preserved in good condition for at least 36 hours; and the construction of one primary and various secondary receiving stations in each cooperating country.

The AID loan would be made at 4 percent interest to the primary borrower and 8 percent to the ultimate borrower. Loans for a minimum of 700 locally constructed boats, imported engines and equipment, and refitting of existing boats would require US$ 9.0 million. Construction of primary and secondary market receiving stations will require US$ 1.0 million of AID funds and US$ 1.0 million of CDB funds. Space in these stations would be rented to cooperatives and individuals for the cleaning and selling of the products delivered by the fishing fleet. The additional $ 1.0 million of CDB counterpart funds would be loaned to cooperatives, individuals, and national marketing boards to buy and sell fish.

Fishermen who now return to port with reduced catches after 6-8 hours, in order to secure higher prices, would be assured by the marketing boards of a profitable minimum price for their catch regardless of when they return. Thus, instead of returning between 10 a.m. and 2 p.m., they would return at 5-6 p.m. with a consigned increase in their total catch. Present net income of fishermen is estimated to average US$50 per 6-day week during the season. It is believed that this could be doubled with improved boats, permitting more efficient onshore operation and farther offshore fishing after July, extending the season to about 9 months. Some 3,000 fishermen would benefit and an estimated 300 new jobs in the marketing system and 300 positions in boat construction and refitting would be created.

A grant of US$1.0 million, channeled through the CFC, is recommended for U.S. technical expertise in boat design, boat construction, equipment purchase, and market design, and for instructional training of fishermen in improved fishing methods and market handling.

3. Other Donor Assistance

The Fisheries Development study will identify present and future assistance possibilities for other donor assistance. The BDD and CIDA are known to be providing some assistance to 2 islands. The potential of utilizing Peace Corps Volunteers in this program should be investigated.

4. Budget Breakdown (estimate)

700 new boats, constructed and equipped, to replace present craft (US$12,000 per boat)	US$ 8,400,000
120 boats, modernized and provided with ice st rage facilities, improved navigation and safety equipment, and other equipment (US$5,000 each)	600,000
Construction of 4 primary marketing centers and 30 secondary buying centers	2,000,000

Revolving funds for marketing		2,000,000
Total		12,000,000
Of which:	AID Loan	10,000,000
	Counterpart contribution	2,000,000

L. AGRICULTURAL PLANNING AND PROJECT DEVELOPMENT

AID Grant __X__ Loan _____ : US$2,800,000

Counterpart Contribution : US$1,000,000

1. Situation

In most countries in the region, there is little technical expertise in agricultural planning, programming, and project preparation, particularly within the Ministries of Agriculture. Even Barbados, which has the greatest capability in these areas, has requested specialized assistance in agricultural economic research that would improve planning and programming and enable the Ministry to assume a greater role in project preparation. Assistance of a more basic nature has been requested by Antigua, Grenada, and St. Kitts.

2. Proposed Program

Long-term assistance, involving considerable participant training, would be appropriate for most countries. The development of sophisticated project preparation skills would be a long-run objective, and the initial emphasis would be on the acquisition of basic skills in planning and program formulation. Local technicians would thus receive training and assistance in clarifying objectives; systematically inventorying the natural resource base; identifying project possibilities; determining human and financial resources available locally; roughly estimating project costs; specifying the nature of both direct and indirect project benefits; and assigning priorities to projects and programs. The recommended program duration is 5 years.

Barbados and, to a lesser extent, Dominica already have many of the basic skills identified above. Thus they are in a position to begin

receiving technical assistance in project preparation at an earlier stage. They also have a base on which to build a technical assistance effort in agricultural economic research. Particularly important in this regard would be research on crop and livestock production costs.

Technical assistance in agricultural planning, programming, and project preparation would appropriately be grant-financed and channeled through the CDB, a major source of loan funds for countries in the region and one which already provides a great deal of assistance in project preparation. Considerable assistance could also be provided by the University of the West Indies.

3. Other Donor Assistance

It is anticipated that the CDB will continue to provide assistance in project preparation. Independent countries in the region might wish to draw on OAS expertise in agricultural planning and programming, and all countries might wish to seek some assistance in these areas from ECLA.

4. Budget Breakdown (estimate)

Costs of this project would vary according to the number of countries requesting assistance, the scope of the assistance, and the appropriate duration of assistance to individual countries (at least 5 years in some cases). A very rough tentative breakdown of project costs is as follows:

Long-term participant training	US$ 150,000
Short-term training programs	150,000
Resident advisors (30 work-years)	2,250,000
Short-term consultants	150,000
Miscellaneous	100,000
	US$2,800,000

M. INTEGRATED RURAL DEVELOPMENT

AID Loan X	:	US$15,000,000
AID Grant X	:	US$ 1,000,000
Counterpart Contribution	:	US$ 5,400,000

1. Situation

Unattractive conditions in rural areas have contributed to a significant decline in agricultural employment since 1960. Younger workers prefer to seek urban employment because the social image of agriculture is one of poverty, hard work, and little opportunity for self-advancement. Labor shortages in agriculture are frequent, and few young people with the necessary vigor and innovative capability remain to provide continuity in the organization of farm activities.

Previous attempts to improve rural life through land settlement schemes, crop and livestock programs, credit, marketing, etc., have not been particularly successful. Emphasizing the technical and economic aspects of agricultural production, they have neglected support services which would make rural living a comfortable and satisfying alternative to urban life. These include services in the areas of communications, education, health, housing, sanitation, and recreation.

2. Proposed Project

The project goal is to make the quality of rural life in Barbados and the Eastern Caribbean LDCs an acceptable alternative to urban living. Income and welfare of rural residents in selected catchment areas will be increased by creating conditions that permit viable full-time family farming in an environment providing adequate social infrastructure.

A preinvestment study will be carried out to identify potential subproject areas. The CDB, which will administer this project, will then

select those catchment areas which are most promising in terms of agricultural potential and target group criteria. Each area is expected to contain several hundred families. A local land authority will be established with responsibility for planning and carrying out the activities under each subproject. On the basis of a comprehensive area plan, an integrated program of activities will be carried out to address both economic and social needs. In addition to providing credit for agriculture, rural industry, and housing, the project will fund infrastructure facilities such as roads, water, electric power, and schools. It also will fund the provision of health, extension, and other services.

3. Other Donor Assistance

None

4. Budget Breakdown (estimate)

Loan	
Infrastructure and services	US$10,000,000
Credit for farming, rural industries, and housing	5,000,000
Grant	
Technical assistance	US$ 1,000,000

N. REGIONAL SMALL ANIMAL SYSTEMS

AID Grant __x__ Loan _____: US$250,000

Counterpart Contribution : US$450,000

1. Situation

Goats, sheep, pigs, and chickens are frequently raised in small numbers by many families throughout the Eastern Caribbean. These family animal enterprises provide food for home consumption as well as income from marketable surpluses. All the islands, however, are particularly dependent on imported animal products to meet existing demand. One of the major constraints to increasing small animal production and productivity is the cost of animal feeds, most of which are imported, and the poor utilization of indigenous sources of feed suitable for small animals. In particular, little work has apparently been done to determine cost-effective feed rations which tend to maximize use of local commodities.

2. Proposed Program

The Survey Team recommends that AID grant funds be used to assist CARDI to develop feed ration recommendations for small livestock. In particular, CARDI would (1) conduct a review of previous work in the region, (2) perform additional feeding trials using available local feeds, including hay and silage, and (3) develop feeding ration recommendations suitable for small farmers and part-time farmers. It is expected that CARDI could perform this activity with its current personnel. The grant assistance would be used for purchasing equipment, animals, and feed supplies. The duration of the grant would be 4 years. Most of the feeding trial activity should be done on real farms with cooperating farmers.

3. Other Donor Assistance

The Government of New Zealand currently has a livestock advisor working

with the CDB. A PVO is reported to be assisting the Government of Barbados with black bellied sheep. The proposed project is complimentary with these known activities.

4. Budget Breakdown (Estimate)

Personnel: 10 work-months of TDY consultation	US$30,000
Commodities:	
-- Animals	50,000
-- Stalls, pens, etc.	20,000
-- Feed	50,000
Training	25,000
Travel and Other Costs	75,000
	US$250,000

O. AGRICULTURAL PRODUCTION CREDIT LOAN II

AID Grant _____ Loan __x__ : US$5,000,000

Counterpart Contribution : US$1,000,000

1. Situation

In 1976 AID authorized a US$10 million loan to the CDB which included $4.0 million for the establishment of an Agricultural Production Credit (APC) program aimed at small farmers in the region's LDCs. The CDB is to lend these funds at a 4 percent interest rate to development finance corporations (DFCs) in individual countries. The DFCs in turn are to lend to small farmers at an interest rate of 12 percent and in amounts as low as US$200. Crop liens are acceptable as security under this program, thus making it possible for farmers who own no land to participate.

A second AID-financed APC loan should be considered for FY1981, if warranted by experience with (1) the first loan, just now being implemented, and (2) the grant-financed project recommended above to strengthen the DFCs. A major concern at present is Government attitudes toward interest rates. Officials in all 8 countries expressed to Survey Team members their dissatisfaction with the 12 percent interest rate charged to farmers, which they regard as too high. This interest rate is not likely to be as great an obstacle to credit utilization as is sometimes believed, and it is more likely to encourage the economic use of resources than a heavily subsidized rate. Complaints that present interest rate structures discriminate against small farmers, however, should be listened to sympathetically in planning for a second APC loan.

2. Proposed Program

If a second loan is authorized, consideration should be given to instituting a graduated interest rate structure under which farmers receiving credit from a development bank for the first time would be charged an interest rate of, say, 6 percent, reflecting the fact that a higher interest rate will be more of burden to them than to established farmers who are experienced in the use of credit. After a farmer has successfully utilized credit at this low interest rate, he could be charged, say, 9 percent on his next loan. Successful performance at 9 percent would be viewed as an indication that the farmer is capable of paying a 12 percent interest rate. (Farmers consistently having difficulties in repaying loans would not be kept at 6 or 8 percent but rather would be dropped from the program.) Ultimately, many of these farmers would be able to "graduate" to commercial credit, though those without land to put up as security could not make this move and would have to stay in the APC program, under which crop liens are accepted as security. Even some landowners might not be able to obtain commercial credit if the loan amounts they seek are so low that the commercial interest rate would not cover operating costs. Such a program would most likely have to be subsidized even though it would probably result in lower delinquency rates. Governments would have to make a firm commitment to providing the subsidy deemed necessary.

Over the long run administrative costs could be reduced, and the need for a subsidy eliminated, if credit could be channeled through cooperatives, producer associations (or perhaps small credit societies, as in Haiti). The feasibility of forming such groups should be explored, though it is recognized that cooperative traditions in the area are weak.

3. Other Donor Assistance

None

4. Budget Breakdown (estimate)

Agricultural Production Credit	US$5,000,000

P. REGIONAL HORTICULTURAL RESEARCH

AID Grant __X__ Loan _____: US$1,000,000

Counterpart Contribution : US$ 300,000

1. Situation

Although expanded production of basic foods is the initial focus of the proposed AID strategy for the Eastern Caribbean, the area's tropical ecology, high per-area profit potential, and need for increased employment make expansion of fruit, vegetable, and spice production an attractive area for a major assistance program. The Caribbean countries are now importing several million dollars' worth of fresh, canned, and dried fruits and vegetables to meet internal demand. A considerable portion of these imports could be produced in the region, thus extending their availability throughout the year and offering more dietary options to rural and urban residents.

The broken topography, high levels of er sion, and soil types found in the region make many areas inappropriate for intensive agricultural exploitation. In some countries these areas are being planted to citrus, avocados, mangoes, coconuts, pineapple, and selected tree spices--all high-demand crops--for use in the region. In other countries the lack of adaptive research is limiting this option.

On the deep, alluvial, lateritic, or old volcanic soils found on more level land at lower elevations along the coasts, the potential for vegetable production in both single-crop and multiple cropping systems will increase significantly as irrigation becomes available. Irrigation without new cropping patterns may result in uneconomic commodity mixes, thus defeating the purpose of U.S. capital inputs developing irrigation

schemes. Year-round vegetable production under irrigation should result in quantum jumps in per-area profits and major increases in employment.

Research on, and production of horticultural products already occurs on a limited scale. Montserrat is presently expanding chili pepper production for sale, under a multi-year contract, to Trinidad-Tobago. Carrots grown in St. Vincent are also exported to regional markets. Pineapple and several tree fruits are produced in Antigua, and Grenada has a sizeable spice industry.

Most countries feel that additional horticultural research is required to further improve product qual ty, cultural practices, and market presentation.

2. Proposed Program

This project will be regionally coordinated by CARDI. Initially, a survey will be undertaken of the cultural, varietal, and market constraints now limiting production. On the basis of this 6-month analysis, a program for fruit, vegetable, and spice research will be developed for those products having the greatest local and regional market potential.

Because of the long time frame involved in fruit research, this project is proposed for a minimum period of 8 years. The initial funding period, however, would be 4 years, after which an overall evaluation of the project will be made. If the initial phase of the research is satisfactorily completed, and there is sufficient promise for significantly increasing yields, income, and employment by developing technological packages during a second phase, the project would be extended for an additional 4 years.

Research, to the extent possible, will be carried out on small farms. Some research on propagation methods, product storage, and varietal selection of trees will be carried out on cooperating experiment stations. Selection of high-quality spices, development of hybrid cocoa varieties, etc., generally will be done on existing plantations. Vegetable-variety and cultural-practice trials will be carried out under small-farm conditions.

3. Other Donor Assistance

The BDD has a horticulturalist working in Antigua, and a horticulturalist provided by the Commonwealth Fund for Technical Asssitance is working in Montserrat. Any regional program in this area must be complementary with the policy and technical inputs provided under other donor programs.

4. Budget Breakdown (estimate)

Personnel	
Technical personnel	US$ 480,000
Short-term consultants	75,000
Support staff	25,000
Subtotal	580,000
Equipment	50,000
Other Costs	
Travel and per diem	100,000
Training	100,000
Materials and supplies	170,000
Subtotal	370,000
Total	US$1,000,000

Q. LAND SETTLEMENT PROGRAM

AID Grant _____ Loan __X__ : US$2,500,000

Counterpart Contribution : US$1,000,000

1. Situation

Throughout the region, Governments have been acquiring land previously operated as large private estates. There is considerable interest in making these lands available to individual small farmers, either through sale or through leasehold arrangements. Some Governments have been emphasizing the latter, but it is not clear that even long-term leases will be secure enough to motivate farmers to make long-term investments. Many farmers now renting land reportedly are interested in becoming owners, and most Governments seem willing to consider selling some of their lands to small holders or facilitating the sale of private lands to them.

2. Proposed Program

The $2.5 million loan program recommended is an integrated effort involving land sales, credit, and technical assistance to groups of small farmers organized as cooperatives or some other type of association. When land sales are to be made directly from private owners to small-farmer groups, sellers would be protected against default by a guaranty fund established in the CDB. The CDB, alternatively, could become a party to the transaction, following the model established in AID's 1970 Land Sale Guaranty loan to Ecuador. Under such an arrangement, the seller would transfer title to the land to the cooperative purchasing it (or to individuals, each of whom would be the sole owner of a portion of the former estate); the cooperative (or individuals) would agree to pay the CDB the purchase price of the land over a predetermined number of years; and the

CDB would agree to pay the seller of the land over the same period. Thus, if the cooperative (individuals) makes its(their) payments on schedule, the CDB would merely pass the payment through to the seller. If the cooperative (or an individual) defaults, the CDB would still have to pay the seller on schedule and would either foreclose on the land offered as security or make a claim against the guaranty fund.

To enhance the purchasers' ability to pay for the land on schedule, the loan would provide funds for credit and technical assistance.

3. Other Donor Assistance

None

4. Budget Breakdown (estimate)

Credit	US$2,100,000
Technical Assistance	100,000
Guaranty Fund	300,000